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TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

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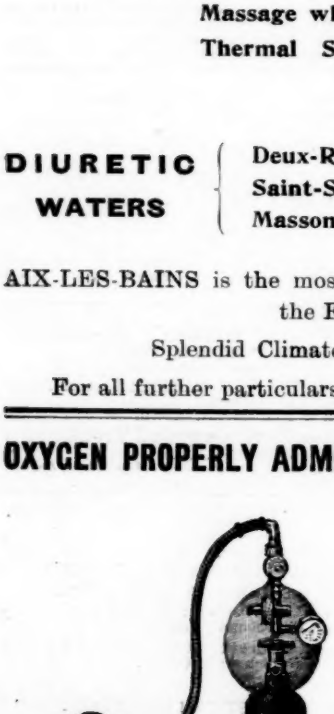

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In long drawn out surgical diseases, for example, chronic suppurative conditions, where the body resistance is lowered, the onset of dysentery may determine a lethal result.

2. *Simulation by dysentery of surgical conditions.*—It is seldom that dysentery simulates surgical diseases. On one occasion a man over middle age was sent into my wards with a diagnosis of cancer of the rectum. The passing of blood and mucus with pain and tenesmus would certainly have led to that tentative diagnosis in this country, especially when, as in this case, an examination of the fæces showed no amœbæ. But after the preparation preliminary to a sigmoidoscopic examination, a further test of the fæces showed great numbers of amœbæ, and all the symptoms subsided under administration of emetine. Dysentery is frequently accompanied by piles, which must not be allowed to mislead the observer.

Sir Leonard Rogers has informed me of one case which was diagnosed by two surgeons as cancer of the rectum, and of another diagnosed as cancer of the cæcum, which were found to have amœbæ in the stools, and were cured by emetine. The same writer has known dysenteric cases diagnosed as tuberculous peritonitis, gangrene of the rectum, and intestinal obstruction.

The simulation of appendicitis by amœbic typhlitis and of cholecystitis by amœbic hepatitis will be touched on later, but the above errors in diagnosis are sufficient to warn the surgeon who works in a tropical country that he must ever be on the watch for dysentery.

3. *The surgical complications of dysentery.*—The surgical complications of dysentery may be classified into: A. Those due to local processes in the intestine. B. Those following on the remote effects of the organism or its toxins. C. Associated surgical conditions.

SURGICAL COMPLICATIONS DUE TO LOCAL PROCESSES IN THE INTESTINE.

Group A may be classified as follows: (i.) Perforation of colon causing general peritonitis, pericolitis, or pericolic abscess. (ii.) Acute œdematous localised colitis—for example, typhlitis. (iii.) Dysenteric appendicitis. (iv.) Extensive sloughing, the colon pus-sac. (v.) Cicatrisation and stricture of the colon or rectum. (vi.) Perinephric abscess. (vii.) Periproctitis.

(i.) *Perforation of Colon Causing General Peritonitis, Pericolitis, or Pericolic Abscess.*

In view of the extensive ulceration often occurring in the colon it is a matter of surprise that perforation is so uncommon. It is less common in bacillary cases. In 350 cases observed by Waller only one perforated, whilst Strong had

three perforations in 200 amœbic cases. In Bartlett's statistics, out of 37 cases dying from amœbiasis or the direct result of dysenteric ulceration only three were due to perforation. Since it has been proved that perforations are sometimes cured naturally, it is possible that a perforating ulcer is more common than statistics show.

The most common sites of perforation are the cæcum and the sigmoid colon. The symptoms produced depend upon the position and direction of perforation of the ulcer.

(*a*) It may perforate into the general peritoneal cavity. In this case onset or increase of abdominal pain, vomiting, and collapse, rising pulse-rate, distension, and abdominal-wall rigidity may indicate the catastrophe, but in patients subject to a severe toxæmia the exacerbation of symptoms may not easily be distinguished from the collapse of toxæmia. If the perforation is diagnosed, what line should the surgeon take? The patient is often very weak, the bowel wall friable and unsuitable for suture, a surgical operation is very likely to have an immediately fatal issue, and, on the other hand, natural recovery has been known to occur. Rogers has pointed out that in bacillary cases the intestinal wall is not usually so friable, and would probably be more easily sutured. I think in most cases the question of operation would depend on the acuteness of the symptoms and the patient's reserve of strength. I have only been able to learn of two cases of successful suture of a dysenteric ulcer which had burst into the general peritoneal cavity. Both were under the care of Mr. C. C. Choyce, who is to be congratulated on these successes. The following case came under my observation.

J. R. M. began to have dysenteric symptoms on June 14th, 1918. The condition was recalcitrant to treatment, and on July 19th there was an acute attack of abdominal pain with rigidity of abdominal muscles and diminution of liver dullness. Perforation was diagnosed, but operation thought to be contra-indicated. The acute signs passed off, but intestinal hæmorrhage occurred and death from exhaustion took place on August 14th, nearly a month after perforation. At the autopsy there were 1½ pints of serous fluid and some flakes of lymph in the peritoneal cavity, and a localised abscess in the region of the mesosigmoid. There was gangrenous inflammation of the descending colon, iliac and pelvic colon, and rectum, with several thin areas sealed by omentum. There is no doubt that if the dysenteric process could have been controlled the patient would have recovered in spite of the perforation.

If operation should be considered advisable, spinal anæsthesia might be suggested, but for obvious reasons patients suffering from dysentery are not the best subjects for spinal injections. The technical difficulties in sewing up a rent in a very friable bowel wall must be considerable. In cases of perforation where the general condition is very poor as a result of toxæmia and exhaustion it is probable that by the adoption of the Fowler position, the injection of saline subcutaneously or intravenously, and possibly the administration of small doses of opium or morphine, the patient would stand as good (or as bad) a chance of recovery as if operation were performed.

(*b*) If perforation occurs retroperitoneally or after adhesions have formed round the thinned area of bowel wall an abscess may form and be amenable to surgical treatment. The most common region for such collections is the cæcal area, where the diagnosis may sometimes be difficult from appendicular abscess or non-suppurative dysenteric typhlitis. One case at Bagdad illustrated this point. There was a painful swelling in the right iliac fossa and amœbæ were found in the stools. I diagnosed amœbic typhlitis, but a colleague favoured the diagnosis of abscess; under treatment by emetine the swelling improved slightly, but a perityphlitic abscess needed to be opened later. The correct diagnosis, I think, should have been localised perforation of the dysenteric cæcum. After the opening and drainage of abscesses resulting from localised perforation of the cæcum Novis states that not uncommonly the edges of the wound may become gangrenous. He adds that such a complication in some cases reacted well to injection of emetine and local application of carbolic acid.

(ii.) *Acute Œdematous Localised Colitis—Typhlitis.*

Dysenteric ulceration and inflammation may be limited to a circumscribed portion of the bowel. This is particularly the case with amœbic infection. Bartlett, in 26 autopsy cases in which amœbæ were found in the tissues, demonstrated that in 2 the descending colon alone showed lesions, in 3 the cæcum and ascending colon were alone involved, whilst in 6 others there was a limited affection of the large bowel. In 9 cases the cæcum showed the most advanced lesion. Now Rogers has laid stress upon the important fact that cæcal dysentery is often latent and does not so often give rise to the more urgent symptoms which result when the lower portions of the colon are involved. This fact was not known to me when first I went East. Hence it happened that from time to time I was faced with the clinical picture of swelling in the right iliac fossa accompanied by local pain and tenderness, which led to an operation under the supposition that there was an acute appendicitis. Operation in such cases revealed a greatly enlarged, œdematous, congested, and acutely inflamed cæcum with an appendix no more inflamed than would naturally result from the neighbouring inflamed cæcum. Such a definite typhlitis was on several occasions unaccompanied by any symptoms of dysentery when the patient came under observation. The only reference in the literature to this condition, apart from the references in Rogers's excellent book, is by Barry and Crump, who mention the simulation of appendicitis by large chronic dysenteric ulcers of the cæcum, and the production of severe intestinal hæmorrhage subsequent to some abdominal operation. But from correspondence and conversation with those who have had experience of dysentery cases in large numbers I gather that many have fallen into this error, though few have written about their mistake. Mr. Choyce, who has had a great experience of dysentery, tells me that in several hospitals he saw dysenteric typhlitis operated on for appendicitis, and on several occasions he was instrumental in stopping the operation when the surgeon had decided to operate. My own experience was rather bitter. Early in 1917 I operated on two patients at Nasiriyah in whom I had diagnosed appendicitis, but in whom I found a true typhlitis. Neither had dysenteric symptoms at the time of operation, but I suspected at the time that the typhlitis was of dysenteric origin. No harm resulted from these operations. At a later date the danger of interfering with such cases was brought home to me. A patient who presented symptoms of appendicitis proved at operation to have a much-thickened,

juicy, congested cæcum and a congested appendix, which I removed. After the operation symptoms of acute dysentery developed, blood and mucus were passed frequently and in large quantities, and coma developed, ending in death within three days of the operation. About a year later I had a somewhat similar case with a happier ending.

Pte. E. was admitted to the 31 B.S.H. in July, 1918, as a walking patient, with constipation put down as the diagnosis on the field medical card. He had had attacks of diarrhœa alternating with constipation, as we subsequently found out. He was given an aperient the day after admission. On the third day after admission he complained of abdominal pain and had a temperature of 101° F. When I saw him a tender swelling could be made out in the right iliac fossa. A diagnosis of appendicitis was made and appendicectomy performed the same day. The appendix was swollen and inflamed, but the cæcum was still more congested and œdematous. Three days later very severe intestinal hæmorrhage occurred, and for several hours the radial pulse could not be felt. After 6 pints of saline had been given intravenously he rallied, but for days he continued to pass blood and mucus, and was troubled with incontinence of urine and vomiting. Then he became delirious, and passed more frequent and offensive stools. Emetine was then started (though neither amœbæ nor specific dysenteric bacilli had been found in the stools), and improvement was then uninterrupted.

These cases taught me my lesson, and I saw later several cases of dysenteric typhlitis which I diagnosed and cured by emetine. The importance of differentiating amœbic (dysenteric) typhlitis from appendicitis is clear, for while operation in the latter case is urgent, in the former it is fraught with peril. When such localised œdematous colitis affects the sigmoid, dysenteric symptoms are more likely to be present and local swelling and pain are less likely to give trouble in diagnosis. I have never seen a local dysenteric affection of the transverse colon, but Colonel T. P. Legge informed me that he saw a swelling of that portion of the gut disappear completely under treatment by emetine. I can do no better than repeat the words of Barry and Crump: "The surgeon will do well to weigh carefully the history of an attack of chronic dysentery before deciding upon an abdominal operation." To that I would add the recommendation that in countries where amœbic dysentery is endemic, the surgeon should have the fæces examined, and try a short course of emetine before operating on cases with symptoms of appendicitis accompanied by a swelling in the right iliac fossa.

(iii.) *Dysenteric Appendicitis.*

The vermiform appendix is affected by dysentery in common with the cæcum, but it is seldom that it gives rise to definite and separate symptoms. Usually this does not matter since both conditions improve together. If, however, perforation of the appendix should occur it would be considered necessary to operate. I had one such case.

A. M., 24 years, was admitted to 31 B.S.H. for corneal ulcer on August 2nd, 1918. On Sept. 14th, 1918, he developed abdominal pain and fever. On Sept. 17th he vomited and I was asked to see him. He presented a tender spot to the right of the middle line on the hypogastrium, tenderness per rectum on the right side of the pelvis, and rotation of the thigh caused hypogastric pain. (In passing I would like to call attention to the last-mentioned sign which I have never seen described, but which is sometimes a very useful help in diagnosing inflammation on the right side of the pelvis. It depends upon the movement of the obturator internus muscle, which causes pain referred to the hypogastrium when there is an inflamed mass adherent to the fascia covering it. This sign is no substitute for rectal examination, but when the latter is difficult or doubtful in a sensitive or stout subject useful aid may be obtained by its trial.)

I operated on this patient and found a large swollen appendix on the right side of the pelvis adherent to an adjacent coil of gut. There was no pus, but a very small perforation of the appendix with no escape of contents. The cæcum was very œdematous. I removed the appendix, but after operation the condition became worse. Hæmorrhage occurred from the bowel and right basal pneumonia supervened. The subcutaneous tissue of the wound became necrotic. There were no signs of peritonitis, but the patient had constant diarrhœa and incontinence of fæces. Death occurred nine days after operation. Autopsy showed extensive ulceration of the whole of the large bowel, whose mucous membrane had a leopard-skin appearance. *B. Shiga* was isolated after death.

I think in spite of the fatal complication the same symptoms would always demand operative treatment, though possibly earlier antidysenteric treatment might have been carried out. But the latency of the dysentery was deceptive, and since examination of the stools showed no specific bacillus or amœbæ a vaccine of *B. coli* had been given on the assumption that the condition was a *B. coli* toxæmia.

(iv.) *Extensive Sloughing: the Colon Pus-sac.*

The dysenteric process is sometimes so acute that large portions of the mucous membrane become necrotic. Sometimes the whole of the mucosa is destroyed, and then a fatal result is the rule. In less virulent cases extensive ulcerative surfaces are left, secondary infection supervenes, and the colon becomes virtually a pus-sac. It is then difficult or impossible to isolate the specific dysenteric bacilli, which, indeed, seem in most cases to be overshadowed by other bacilli within a few days of onset of the disease, as shown in the table of Martin and Williams:—

Period of disease.	No. of examinations.	Positive.	Percentage.
1-5 day	153	104	68·0
6-10 ,,	161	28	17·4
11-15 ,,	194	13	6·3
16-20 ,,	162	5	3·1
21-30 ,,	205	3	1·5
31-40 ,,	104	3	3·0
41-50 ,,	34	1	3·0

Carey Evans has pointed out that the majority of chronic dysentery cases are by no means simple infections. He remarks that at post-mortem examination the large intestine in such cases is an abscess cavity. So we must conclude that the patient is often well of his specific dysentery but ill from the ulceration and secondary infection which result from it. In such cases the physician, in addition to specific treatment, helps the evacuation of the toxic intestinal contents by the administration of aperients and by washing out the lower bowel from below. Can the surgeon be of assistance either (1) in the subacute stage, when the ulceration is taking place, or (2) when the colonic pus-sac is formed? In any case, it is assumed that the surgeon would not be needed until the art of the physician has failed to arrest the disease. This would exclude most cases of amœbic infection since they react to emetine so well.

. (1) The general opinion is that surgical measures have no place in the acute or subacute stage. Cotte, however, has recently recorded seven cases in which he performed appendicostomy between the fifteenth and twentieth day of the disease when medical treatment had been of little or no avail. Five of the seven made a good recovery. Cotte washed out the colon with silver nitrate solution, 1 in 1000. In none of his cases did the operation appear to do harm, though it failed to save two patients. In the five successful cases recovery was prompt and permanent. It is hardly wise to draw conclusions from such few cases, though clearly the procedure is not so unreasonable as some have assumed.

(2) In chronic dysentery, especially the bacillary variety, when the sloughs which have come away make it clear that large ulcerating surfaces are present, and the clinical condition of the patient gives evidence that he is being slowly poisoned by the toxins which are being absorbed, the problem is less doubtful. Irregular fever, rapid pulse-rate, anæmia, emaciation give the clinical picture which ends in death from asthenia if prompt measures are not taken. Such cases are somewhat similar to those terrible cases of ulcerative colitis which are well known and dreaded by all physicians of experience.

When once it is certain that there are large chronic ulcerating surfaces in the colon, and when symptoms of toxæmia are present and do not improve under medical treatment, then surgical measures are imperative.

Reasons for Operation.

There are two purposes for which the surgeon may be asked to operate: (*a*) to provide an opening for washing out the colon from above, or (*b*) to divert the intestinal contents so as to give rest to the colon. These purposes are not necessarily mutually exclusive, but upon the main purpose depends the type of operation.

For providing means for irrigation of colon from above, appendicostomy and valvular cæcostomy are suitable. For diversion of the intestinal contents the surgeon must perform open cæcostomy or enterostomy or ileo-sigmoidostomy.

Appendicostomy has met with a considerable amount of success. The appendix is brought up to the abdominal wall, part of it is removed, but about an inch is left into which a rubber catheter is inserted, and through this the colon can be irrigated. Sometimes the appendix may be adherent, or difficult to find, or diseased, and then cæcostomy by the valvular method of Gibson is indicated. Valvular cæcostomy is probably preferable in most cases. By irrigating the colon through the opening it is possible to avoid stagnation of poisonous products with consequent toxæmia. The operation usually fulfils its purpose, though it is necessary to continue irrigation daily for months till the ulcerative surfaces have had time to heal. The condition may relapse if the opening be allowed to close too soon. It is well known that many dysenteric patients die with symptoms of toxæmia often extending over many weeks. Yet there appears great reluctance to try the simple surgical measure which at any rate *may* save the life which is failing.

Illustrative Case.

The following case illustrates well the remarkable change for the better that may happen in suitable cases.

Pte. E. L., 29 years. Admitted to 31 B.S.H., on Dec. 10th, 1917, under the care of Captain Waller, R.A.M.C. History: Slight dysenteric attacks in August and October, 1917. The present attack started in December, 1917. After admission he had four weeks' treatment with emetine. On Dec. 11th and 26th, *Entamœba histolytica* found in stools. Jan. 6th: Poor general condition. Tongue foul. Entire course of colon tender. Feb. 6th: Examination of stools negative to *E. histolytica*. Feb. 21st: There had been steady deterioration in spite of three 12-day courses of emetine. Pulse-rate 130. Stools varied between 6 and 10 per diem—nearly every one showed blood and sloughs.

On this date, on the advice of Colonel Willcox, cæcostomy (valvular) was performed. Immediate and rapid improvement occurred on beginning irrigation from above. Patient was evacuated on May 6th, 1918, having put on much weight.

No one who has seen a case like the above can doubt the efficacy of the operation in such patients. If the colon is so diseased that it is desired to prevent the fæcal contents passing through it, open cæcostomy (cæcal anus) enterostomy, or ileo-sigmoid anastomosis may be performed.

Open cæcostomy (i.e., freely opening the cæcum after attaching it to the abdominal wall) has been advocated at different times during the past 30 years, but not often practised. Herrick, however, in 1909 published an account of 11 cases all practically moribund, of which he saved 4 by an open cæcostomy.

Enterostomy has been suggested for those cases in which the cæcum is badly diseased. The only case in which I have known this to be done was under the care of Mr. McNeill Love at Amara. A cæcostomy was first performed and proved of benefit only for a short time. An abrupt relapse occurred, so an enterostomy six inches from the cæcum was performed. The lower end of the small intestine was closed. Improvement was immediate, and the patient put on 2 st. weight in six weeks. The enterostomy was closed three months after the second operation by lateral implantation into the ascending colon. In Mr. Love's opinion complete enterostomy is the best operation for chronic dysentery which does not react to treatment, for in no other way can complete rest of the colon be attained, and such rest, he thinks, is of more importance than irrigation. (Mr. Love tells me that Mr. Grey Turner suggested the idea to him.)

I cannot find any cases which have been treated by ileo-sigmoidostomy, though Carey Evans puts forward the opinion that the ideal treatment is by such an anastomosis combined with appendicostomy. But a short circuit would not divert the whole contents of the bowel as would complete enterostomy or enteric anus.

So far as the limited but collective experience enables us to judge one would conclude that for the colonic pus-sac of chronic dysentery, or for any chronic toxæmic ulcerative colitis, appendicostomy or valvular cæcostomy should first be tried, and if no improvement occurred after irrigation an open cæcostomy or, better still, enterostomy with complete division of the small gut would be advisable. Lateral anastomosis whilst the colitis was still active would hardly be a wise procedure.

(v.) *Cicatrisation and Stricture.*

It is surprising that so few cases of post-dysenteric stricture of the large bowel are on record. Perhaps it is because the milder degrees of ulceration heal without undue contraction, whilst many of those with gangrene of large portions of the mucous membrane, which would be followed by stricture,

lead to a fatal issue. On this point Sir Leonard Rogers has kindly written me. He writes:—

"I have never seen stricture of any part of the large bowel follow dysentery, nor do I know of any such case in our museum, which dates back over 80 years and contains some five thousand specimens, including numerous dysentery ones. This is certainly rather strange in view of the extent of damage to the bowel, but may perhaps be partly explained by the more extensive lesions of amœbic dysentery being so frequently fatal in the acute stage while in the bacillary the lesions do not extend deeper than the submucous coat as a rule."

Davidson saw six cases of stricture of the colon during 30 years of experience of dysentery in India. No case of stricture was recorded in the large number of cases in the American Civil War, though we have no proof that the cases were followed through.

In text-books it is customary to describe dysenteric stricture of the rectum as if it were a fairly common occurrence, but in spite of the large numbers of cases of dysentery in the late war it is rare to find a rectal stricture resulting therefrom.

It is well recognised, however, that persons who have been the subject of severe dysentery may after complete recovery still suffer from minor derangements of the bowel. I would hazard the suggestion that some of these may be due to irregular or undue cicatrisation of the colon, if not to definite stricture.

(vi.) *Perinephric Abscess.*

It is with some hesitation that I put perinephric abscess as a complication of dysentery, but in a series of 11 perinephric abscesses (not consequent on gross disease of the kidney) which I have treated in the past two years four had a previous history of dysentery or diarrhœa. In two of these amœbic cysts were found in the fæces. The organism in the abscesses was always the staphylococcus. It is, of course, possible that the septic organism would escape through the diseased gut wall where it was unprotected by peritoneum and so cause an abscess in the loose cellular tissue round the kidney. Treatment of such abscesses by incision and drainage at the outer border of the erector spinæ is an easy and satisfactory procedure.

The remote effects of the organism or toxins are many and serious.

LESIONS CAUSED BY THE AMŒBA HISTOLYTICA.

We must first consider the lesions caused by the *Amœba histolytica:* hepatitis, liver abscess, renal abscess, cerebral abscess, splenic abscess, cystopyelitis.

Amœbic Hepatitis.

Amœbic hepatitis is a common complication of amœbic dysentery, as a rule easy to diagnose and readily amenable to treatment by emetine. Some cases are mistaken for cholecystitis and some may be confused with malarial hepatitis, but reaction to the specific treatment will soon confirm or reject the diagnosis. The symptoms are pain in the hepatic area and possibly right shoulder region, enlargement of the liver, and fever; there is usually a leucocytosis and there may be slight jaundice. A rigor may occur at the onset. The amœbæ cannot always be found in the stools at the time of the hepatitis, but usually there is a history of dysentery. The diagnosis is made sure by disappearance of the symptoms under treatment by emetine. It is possible to watch the decrease in size of the liver and the increase in movement of the diaphragm by X ray examination with the fluorescent screen. At Nasiriyah, by the courtesy of the radiologist (Captain J. L. Sen, I.M.S.), I was able to do this with advantage.

Liver Abscess.

The subject of liver abscess can no more than be touched upon in this brief review. The prevention of amœbic abscess of the liver is now a feasible project, thanks to the researches, clinical acumen, and sound judgment of a Fellow of this College (Sir L. Rogers), whose successful advocacy of the value of emetine would alone entitle him to the thanks of grateful humanity. If every case of amœbic dysentery be treated early and thoroughly by emetine, and if hepatitis be similarly treated at its inception, then surgeons will have but few liver abscesses to treat.

The early symptoms of liver abscess are those of hepatitis. In addition there is usually some congestion of the right lung base, and often wasting and anæmia. Fever is often slight and variable. The abscess may be distinguishable by X rays and may cause a swelling either of the chest wall or in the right loin or epigastrium; it may burst into the lung or some abdominal viscus. The common position of a single abscess is in the upper part of the right lobe.

In differential diagnosis one has always to bear in mind malaria, typhoid fever, paratyphoid, perinephric abscess, pleural effusion, cholecystitis; appendicitis and enlargements of the liver from other causes. Most surgeons agree that exploration by the needle is the only certain method of diagnosing the presence of an abscess.

The treatment of liver abscess is now a successful procedure. The exact method adopted varies, but there are two objects aimed at in all the methods: (1) evacuation of the abscess cavity; (2) destruction of the *Entamœba histolytica* in the walls of the abscess cavity.

The abscess may be evacuated either: (*a*) by aspiration, repeated several times if necessary; (*b*) by puncture and insertion of a small metal or rubber tube for institution of siphon drainage; (*c*) by free incision, resection of rib, and insertion of large drainage-tube.

Good results have been published by each method. I do not think that the method of evacuation matters very much so long as the amœbic infection is also dealt with. This can be done by the injection of a solution of quinine, or of emetine, into the abscess cavity; or simply by the subcutaneous or subfascial injection of emetine solution (gr. 1 daily for 10 or 14 days). I believe that it is due to simultaneous treatment by emetine that the results in drainage of liver abscess are more speedy and satisfactory. Though personally I am in favour of free drainage of liver abscess, I make the proviso that every time the surgeon dresses the case (and he should not depute the dressing save to another surgeon) aseptic precautions should be as strict as for an abdominal section. If that be insisted on and if emetine be given, I think open treatment of the abscess the most satisfactory.

When there are several abscesses in the liver the prognosis is extremely grave and surgical intervention is often if not usually unsuccessful. However, if taken in an early stage there is evidence to show that multiple liver abscesses may clear up completely under emetine (Rogers).

Unfortunately, it is not usually possible to diagnose multiple liver abscesses in the early stage. Of 16 cases of liver abscess which have come under my personal care 2 ruptured into the lung and got well under administration of emetine, 2 were treated by aspiration and injection of quinine hydrochloride into the cavity, 2 by aspiration and administration of emetine, and 10 by free drainage of the abscess combined with subcutaneous emetine. There were two deaths, one patient who had multiple abscesses and another who, after insertion of a drainage-tube, had to be dressed and nursed in a very dirty hut made of matting, and who consequently got secondary infection of the abscess. All the later cases were treated in a hospital in Bagdad, which in many respects would compare favourably with many of our hospitals in England, and where aseptic surgery could be practised with safety.

Rarer Complications.

Rarer complications of amœbic dysentery are cerebral, renal, or splenic abscesses. Abscess of the brain never occurs apart from liver abscess. Kartulis and Jacob say that it occurs in 3 per cent. of cases of liver abscess, but Legrand thinks it still less common. The abscess is usually single. The symptoms are those usually associated with brain abscess, depending for focal symptoms upon the site of the lesion. No case of this nature has come under my observation.

Still more rarely amœbic abscesses of the kidneys and spleen have been reported. Amœbæ have also been found in the urine and a cystitis and pyelitis ascribed to their pathogenic action.

SURGICAL COMPLICATIONS DUE TO BACILLARY DYSENTERY.

The remote complications of surgical interest due to bacillary dysentery are: septicæmia, arthritis, conjunctivitis, iritis, pyæmia, myalgia, fibrositis, periostitis.

Septicæmia.

This I mention first, not because it is common, but because the fact of its occurrence points the way to the cause of the other complications. Several observers have obtained *B. Shiga* from the blood. In 1918 Maer obtained a pure blood culture of the bacillus during life in a patient who had marked cerebral symptoms but no abdominal pain, straining, or tenesmus. The specific organism was not obtained from the stools, but was recovered from scrapings of the bowel mucosa after death. Waller has recorded a case in which *B. Flexner* was grown in pure culture from the blood taken shortly before death. So it is possible that many of the remote complications are due to the effect of the bacilli transported via the blood stream.

Arthritis.

Joint affections have for long been known to occur in certain dysenteric patients, but till the late war scant attention had been paid to the condition. Shiga, in his article in Osler and McCrae's System, gives but a line to arthritic symptoms. But a great mass of evidence has recently accumulated to put our knowledge on a surer foundation. Several papers on the subject have recently been written (notably one by Graham), and I can but summarise the conclusions which are agreed upon by most (if not all) observers.

Etiology.—The lesion is generally due to the *B. Shiga* or its toxins. In most cases the fluid withdrawn from the joint is sterile, but occasionally the bacillus is recovered. Dr. William Campbell (who had a very large experience of dysentery from the time of the Dardanelles campaign till 1919) kindly informs me that he examined the fluid from 18 cases of arthritis, obtaining the *B. Shiga* from 1 case but finding the remainder sterile. It is difficult to determine whether the condition is due to a metastasis of organisms which soon die out or whether the toxins of the bacteria generally cause it. Probably the latter is nearer the truth, since it is known the *B. Shiga* produces toxins.

Time of onset.—The joint affection usually develops soon after the acute stage of dysentery is over. The day of the disease on which it appears is therefore variable. The onset is frequently associated with imperfect evacuation of the intestine. A careful observer (Captain D. W. Ritchie) writes: "Arthritis usually occurred when the cases were becoming convalescent; as a predisposing cause early constipation was an easy first, and cases treated by frequent doses of tinct. opii, which caused retention of the discharge in the bowel, were very prone to develop arthritis."

Incidence.—About 1 to 2 per cent. of cases of bacillary dysentery develop joint trouble. Waller had 6 cases among 350 patients and G. Singer 7 in 600 patients.

Severity of dysentery.—Though occurring sometimes after very acute cases, it is noteworthy that arthritis frequently developed after very mild attacks of dysentery. Occasionally it has been the development of an arthritis which has led to the discovery of a latent dysenteric infection. Colonel R. E. Kelly has kindly informed me of an epidemic of mild diarrhœa, which was followed in each case by arthritis manifestations coming on 14 to 21 days after the attack. It affected a large number of the personnel of a base hospital and from the similarity of the interval between the diarrhœa and the arthritis in each case he had no doubt that it was a specific organism causing both conditions, though cultivation proved unsuccessful.

Joints affected.—The knees and ankles most commonly, but almost any joint may be affected. Shoulders, elbows, wrists, temporo-maxillary, sterno-clavicular, and rarely the hip-joints, may suffer.

Types of joint affection.—Sometimes there is a mere arthralgia when pain is complained of, but no local sign of disease can be detected. Frequently there is considerable effusion, especially in the knees, though there is no redness or increased heat in the joint. A third and more intractable variety is that in which there is great thickening of the peri-articular structures which leads to considerable limitation of movement of the joint.

General course.—The onset is sudden, ushered in by pain in the joint often of a severe character. Effusion usually follows and the pain subsides. Fever is usually slight, though it may be more pronounced. The condition may very quickly subside, but very often lasts for two to three months, and it may be much longer before the joint recovers full function. A distinguished member of our profession who suffered severely from dysenteric arthritis in the South African War informed me that it was six months before he could walk without assistance, and much longer before he could move with any agility, and even after the lapse of so many years occasional pain and swelling in the knees occur.

Whilst in Mesopotamia I saw six cases of dysenteric arthritis in consultation with Captain Waller and several slighter cases came direct into my surgical wards. I have seen two cases since my return home, and would like to remind my hearers that a history of dysentery will now need to be inquired into in any case of arthritis.

Treatment.—The joints must be rested during the acute stage and benefit may result from counter-irritation. Firm pressure by wool and bandage or by strapping may cause the effusion to subside more quickly. Aspiration may be necessary if the effusion is great and likely to over-distend the joint ligaments. Antidysenteric serum is said by some to benefit the arthritis. After the acute symptoms have passed massage and graduated passive movement should be undertaken. In those cases with thickening round and adhesions within the joint hot-air baths, ionisation, Turkish baths, and other well-recognised methods of treating chronic joint trouble may be tried, but recovery is often slow.

Conjunctivitis and Irido-cyclitis.

One or other of these is a common accompaniment of arthritis. In Graham's series it occurred in about 50 per cent. of the arthritic cases and the same proportion is recorded by Stettner, who remarks that eye symptoms preceded the joint symptoms in one-third of the cases. The conjunctivitis is usually bilateral and clears up readily in a few days under simple treatment. The iritis may lead to adhesions, but usually subsides under treatment by atropine.

Pyæmia.—Remembering the severe ulceration often present in the colon, it is no wonder that sometimes a general septic infection occurs. I saw one patient who at autopsy was found to have streptococcal abscesses in the gall-bladder, kidney, and spleen.

ASSOCIATED DISEASES.

Associated diseases are parotitis, boils and abscesses, thrombosis (gangrene of foot, pseudo-elephantiasis of leg).

Parotitis has been mentioned by many observers as a complication of dysentery. It is an infrequent occurrence, but I had at least one case. Whether the infection gains access from the mouth or, what is quite as likely, gets there via the blood stream from the ulcerated colon we cannot determine, but the inflammation may be severe enough to cause complete necrosis of the gland. According to Shiga, it is usually bilateral and occurs from the third to the fifth week of the disease. If the general symptoms of toxæmia are serious it is essential to incise the parotid freely.

Boils and abscesses may be an accompaniment of dysentery. Shiga mentions two cases of abscess which occurred in convalescence, and Waller states that 9 patients out of 350 developed boils on the convalescence of bacillary dysentery. In one case of Shiga type 28 large boils appeared in successive crops over the buttocks, trunk, axillæ, face, and fingers, with pyrexia for 14 days. Whether the resistance to staphylococci is lowered by the disease or whether it be a case of pyæmia originating in the colon it is difficult to determine.

I wish to express my thanks to all those who so kindly placed at my disposal their valuable knowledge and experience.

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THE LATE MR. D. J. WILLIAMS.—The death of David James Williams took place at his residence at Llanelly, Carmarthenshire, on Feb. 27th, at the age of 66. He received his medical education at University College, London, where later he was demonstrator of practical physiology, qualifying M.R.C.S. in 1877. In 1894 he obtained the Fellowship. He was greatly esteemed in Llanelly, where he had a large practice and was active in public affairs, being a member of the Chamber of Commerce and a medical referee under the Workmen's Compensation Act.

ST. BARTHOLOMEW'S HOSPITAL APPEAL FUND.— A successful bazaar, organised by the Women's Guild, was held in the Great Hall of the hospital on March 4th. A soiree has now been arranged for Saturday, March 20th, at 8 p.m., to be held at the Royal Albert Hall, South Kensington. The artistes appearing are: Miss Carmen Hill, Mr. Ben Davies, Mr. Ivor Foster, Miss Sybil Goodchild, Mr. Lorne Wallet, Master Napoleon Bertrand Eugene, Professor K. Ronay, and Mr. Corelli Windeatt's Orchestra of 90 performers. The hospital is issuing a pleasantly written booklet, describing hospital life from the patient's point of view, in all of the new nurses' home.

PLEURAL EFFUSION:

ITS CYTOLOGY AND THE RESULTS OF PARACENTESIS.

BY D. S. PAGE, M.B., B.CH. CANTAB., M.R.C.S., L.R.C.P.

WHILE lymphocytic pleural effusions have for some years been regarded as usually tuberculous in origin, opinion is not unanimous as to the cause of effusions in which other cells predominate. Varying views are also held on the indications for paracentesis in tuberculous pleurisy. In the hope of aiding the elucidation of these problems this investigation was undertaken.

The statistics are taken from the notes of patients with pleural effusion who were in the Brompton Hospital for Consumption and Diseases of the Chest in the years 1911 to 1918. The series includes only effusions in which no organism other than the tubercle bacillus was demonstrated, of which there is a record of the cytology and in which the presence of red blood corpuscles is not reported. This last condition, although it seemed necessary to ensure accuracy in the cytology of the effusions, reduced very considerably the number of cases for investigation.

In all 60 cases were investigated. These were divided into six groups as follows: (*a*) 20 cases in which tubercle bacilli were demonstrated in the sputa. (*b*) 8 cases in which there was clinical evidence of pulmonary tuberculosis, but tubercle bacilli were not demonstrated in the sputa. (*c*) 22 cases in which there was no evidence of pulmonary disease. Of these most were regarded as tuberculous. (*d*) 2 cases of hydropneumothorax. (*e*) 6 cases of mediastinal neoplasm. (*f*) 2 cases associated with cardiac and renal disease respectively.

Cytology.

On the subject of cytodiagnosis in Allbutt and Rolleston's "System of Medicine"[1] it is written, "The pioneers in this work were Widal and Ravaut, who, as a result of their observations, stated the following cytological formula: When the dominant cells present in a pleural effusion are small lymphocytes the probable cause of the inflammation is the tubercle bacillus; when the dominant cells are the polymorphonuclear leucocytes the probable cause is some pyogenetic micro-organism.—If the effusion from a tuberculous pleurisy is examined very early, the predominance of the lymphocyte is less marked than as the effusion progresses. The polymorphonuclear cells may even be present in excess; Dr. Gulland considers that this is limited to the first three days of the effusion. To these original conclusions of Widal and Ravaut's little has since been added by other observers."

In the series under discussion, in only six cases were more than half the cells polymorphonuclear neutrophiles. Of these, four had tubercle bacilli in the sputa. Of the two remaining, one (Case 58) was associated with septic pneumonia in a patient with mediastinal lymphosarcoma; the other (Case 50) was regarded as of rheumatic origin. This patient, admitted with a history of pain in the joints of one week's duration, had pericarditis in addition to double pleural effusion. In the tuberculous cases the duration appears to have been, in Case 1, eight days; in the others (Cases 9, 11, and 18) probably some months. Dr. Roodhouse Gloyne considers that the predominance of the polymorphonuclear neutrophilic cell in a tuberculous pleural effusion is

usually due to pneumothorax, though this may not have given rise to physical signs. The finding of tubercle bacilli in the fluid in Case 9 lends some support to this view, so far as that case is concerned; for tubercle bacilli are commonly more numerous in hydropneumothorax than in effusions not communicating with the lung. Of two cases (51 and 52) diagnosed as hydropneumothorax, tubercle bacilli were found in the effusion of one, but in both the enumeration showed a preponderance of mononuclear cells, the polymorphonuclears being 15 per cent. and 6 per cent. respectively.

Gruner states[2]: "The appearance of polynuclear cells in an exudate may be looked on as the expression of a general reaction on the part of the individual against a more severe infection. The more virulent the infection the more decided will the polynucleosis be." Three of the cases under discussion had severe general reactions. The fourth, however, in which tubercle bacilli were demonstrated in the fluid, was apyrexial throughout the period of his stay in hospital, and on discharge was sent to Frimley Sanatorium.

The remainder of the effusions of tuberculous or of unknown origin showed a predominance of small mononuclear cells, with the exception of Case 49, in which 80 per cent. of the cells were coarsely granular eosinophiles. While this patient was in hospital his blood contained at different times 5 per cent., 7 per cent., and 12 per cent. of eosinophiles. There was no history of asthma, no evidence of infection by worms, and, indeed, no reason was found for the eosinophilia. This patient was good enough to come to the hospital for examination five years later, when he appeared to be enjoying good health. His weight had increased by 13 lb. since his discharge from hospital. He had no cough nor expectoration, but complained of occasional pain in the chest. On examination no signs suggestive of pulmonary tuberculosis were found. His blood contained 6500 leucocytes per c.mm., of which 5 per cent. were coarsely granular eosinophiles.

The effusion of Case 57 contained 40 per cent. eosinophilic cells. This was from a patient who died shortly afterwards from a columnar-celled carcinoma involving the left lung and the mediastinum. In the right iliac fossa was a large cyst, behind which the ilium and sacrum were found to be eroded; sections of the cyst wall appeared to be carcinomatous. The blood of this patient contained 7 per cent. eosinophiles. No parasites nor ova were found in the stools.

The presence of these cells is recorded in only two other cases: Case 14, tuberculous, had 2 per cent., and Case 50, regarded as rheumatic in origin, had 2·5 per cent. The two cases in which eosinophilic cells predominated were probably non-tuberculous. This is in conformity with the experience of Barjon and Cade,[3] who showed by inoculation experiments that their eosinophilic effusions were not tuberculous.

Basophilic cells were reported to be present in only four cases, and in these in small numbers. The eosinophilic effusion (Case 49) contained 3·8 per cent. basophilic cells, and that of the supposedly rheumatic case (50) 1·75 per cent. In Case 60, chronic nephritis, 1 per cent. of these cells was present. The only tuberculous effusion in which basophilic cells were found contained 0·6 per cent. only of these cells. This case was 28, in which the signs of pulmonary tuberculosis were not definite. The significance of these cells is not known.

The proportion of large mononuclear cells was very variable but, except in the two cases of hydropneumothorax, in which large mononuclears formed 31 per cent. and 26 per cent. respectively of the total cells, in none of the effusions of tuberculous origin was it higher than 23 per cent. Among the growths the highest number reported for this cell was 56 per cent., and even in the case of arteriosclerosis with heart failure it was only 63 per cent.

Dr. Roodhouse Gloyne[5] considers that hydrops pleuræ of renal origin more nearly approaches the character of an exudate than that of a transudate. Only one case (No. 60) occurred in this series. In this the cells were polymorphonuclears 24 per cent., small mononuclears 55 per cent., large mononuclears 20 per cent., basophiles 1 per cent. From this patient, who was suffering from chronic interstitial nephritis, the fluid had previously been drawn off weekly for eight weeks.

In the summary of his paper on Cytodiagnosis, Athole Ross[4] states: "It will be unnecessary in future to have recourse to animal experiments to prove the existence of tuberculous pleurisy if a well-marked lymphocytosis has been obtained." It is now recognised, however, that in some effusions associated with new growths lymphocytosis is present. Of six patients in this series suffering from mediastinal growths, in three over 80 per cent. of the cells of the effusions were small mononuclears. In Case 53, lympho-sarcoma invading the left pleura, the cells in the effusion at the first examination had been: large mononuclears 56 per cent., small mononuclears 44 per cent. Three months later 96 per cent. were small mononuclears. This is a striking example of the supposed tendency in effusions for the proportion of small mononuclear cells to be progressively increased. Little evidence of this tendency is obtained from a comparison of the cytology with the duration of effusion in this series. None were examined earlier than five days from the time of onset of pleurisy. Two (Cases 14 and 26) were examined on the fifth day; they contained 68 per cent. and 58 per cent. respectively of small mononuclear cells. In Case 34, aspirated on the tenth day, 92 per cent. of these cells were found, but in cases of much longer duration the predominance of the small mononuclear was frequently less.

Results of Paracentesis.

In Allbutt and Rolleston's "System of Medicine" (1909) it is recommended that in pleural effusions complicating pulmonary tuberculosis paracentesis should be avoided, unless the quantity of fluid be so great as to cause embarrassment of the respiration. In uncomplicated pleural effusion, paracentesis should be performed in all cases presenting an effusion so great as to fill the pleura; in those attended by any distress of breathing, and in those showing no signs of absorption after a week or ten days of treatment by drugs. The treatment of primary tuberculous effusions has tended recently to become more conservative. Rest of a part of the body affected by tuberculosis has been found useful in other regions, notably in the joints; it is reasonable to expect it to be beneficial in pleurisy. In addition to this, the opinion has gained ground that some constituent of the fluid is useful in combating the disease. Gilbert of Geneva, in 1896, advocated the withdrawal of a small amount of fluid from the pleural cavity and the inoculation of 2 c.cm. into the patient's own subcutaneous tissue. A. Jousset, in 1912, recommended

TABLE I.—*Twenty Cases in which Tubercle Bacilli were Demonstrated in the Sputum.*

No. of case.	Initials.	Age	Sex	Cells, &c., in pleural fluid. P	S	L	E	B	T B	Probable duration of effusion before examination.	Paracentesis.	Amount in ounces.	Temperature before paracentesis.	Temperature after paracentesis.	Condition of patient on discharge from hospital.
1	J. M.	46	M.	75	12	13	0	0	0	8 days.	+	33	+	Higher one evening.	Worse.
2	S. D.	18	M.	7·5	75·5	17	0	0	0	16 ,,	0	0	+	...	,,
3	J. L.	27	M.	2	86	12	0	0	0	19 ,,	+	30	+	Unaltered.	Stationary (discharged following day).
4	F. W.	22	F.	1	81	18	0	0	0	?	0	0	+	...	Worse.
5	A. M. L.	30	F.	1	78	21	0	0	0	21 ,,	+	30	+	Unaltered.	Improved.
6	E. J. H.	39	M.	1	87	12	0	0	0	21 ,,	0	0	+	...	,,
7	S. B.	40	M.	16	80	4	0	0	0	5 weeks.	+	60	—	Slight rise, 2 days.	,,
8	R. C. S.	39	M.	2	85	13	0	0	0	?	+	16	99° occasionally.	Higher for 5 days.	Death 16 days after aspiration.[3]
9	J. J. T.	36	M.	88	4	8	0	0	+	2 months.	+	25	—	...	Improved.
10	A. Mc. L.	23	M.	7	70	23	0	0	0	11 days.	+	20	+	Fall 1° for 2 days. T. normal in 7 weeks.[1]	Stationary.
11	G. C.	56	M.	60	27	13	0	0	0	? months.	+	11	+	Higher following day, fall after.[2]	Death 3 months after asp.[4]
12	R. E. D.	41	M.	0	84	16	0	0	0	?	+	6	+	Unaltered.	Stationary.
13	J. H. A.	35	M.	4	83	13	0	0	0	1 month.	0	0	+	...	Improved.
14	T. W.	24	M.	18	68	12	2	0	0	5 days.	+	20	+ falling.	Fall continuous.	,,
15	W. C.	49	M.	2	86	12	0	0	0	6 weeks.	+	72	+ 100	Fall same day to 98·6. T. remained normal.	,,
16	A. C.	31	M.	5	85	10	0	0	0	?	0	0	+	...	Death 3 months after exploration.
17	J. K.	40	M.	21	71	8	0	0	0	7 weeks.	0	0	—	...	Improved.
18	W. R.	38	M.	54	35	11	0	0	0	6 months.	+	29 30	+2 months' duration.	Slight fall before asp., more pronounced after.	,,
19	G. F. F.	25	F.	10	73	17	0	0	0	1 month.	0	0	+	...	Death.
20	E. E.	21	F.	18	82	0	0	0	0	?	0	0	+	...	Worse.

[1] Fall had commenced before aspiration. [2] This had commenced before aspiration. [3] Extensive pulmonary and intestinal disease. [4] P.M., lungs caseous at apices; miliary elsewhere.

TABLE II.—*Eight Cases in which there was Clinical Evidence of Pulmonary Tuberculosis, but Tubercle Bacilli were not Demonstrated in the Sputum.*

21	W. R. B.	24	M.	3	93	4	0	0	0	?	0	0	+	...	Stationary.
22	E. P.	30	M.	0	93	7	0	0	0	1 month.	0	0	+	...	Improved.
23	E. G. H.	8	F.	13	77	10	0	0	0	?	0	0	+	...	,,
24	F. M.	24	M.	12	74	14	0	0	0	14 days.	+	60	+	Temporary rise followed by gradual fall.	Stationary.
25	J. E.	33	M.	6	78	16	0	0	0	6 weeks.	0	0	+	Higher same evening.	Improved.
26	C. F. R.	1½	M.	26	58	16	0	0	0	5 days.	0	0	+	...	Death 12 days later.
27	E. J. T.	43	M.	28	65	7	0	0	0	2 weeks.	+	30	+ falling.	Fall continues.	Improved.
28	S. R.	29	M.	2·8	75·3	21·3	0	0·6	0	?	0	0	+	...	,,

TABLE III.—*Twenty-two Cases in which there was no Evidence of Pulmonary Disease.*

29	M. L. T.	15	F.	1	98	1	0	0	0	6 months.	0	0	+	...	Improved.
30	S. H.	27	M.	8	77	15	0	0	0	?	0	0	—	...	,,
31	J. T. P.	24	M.	8	80	12	0	0	0	3 months.	+	3½	+	Unaltered.	,,
32	A. R.	33	F.	12	83·5	4·5	0	0	0	3 weeks.	0	0	+	...	,,
33	W. H.	24	M.	1	88	11	0	0	0	1 month.	+	33	+	Fall to 99° on following day.	,,
34	A. G.	34	F.	3	92	5	0	0	0	10 days.	+	5	+	Higher one evening, followed by gradual fall.[5]	
35	E. C.	53	F.	12	83	5	0	0	0	4 months.	+	10 60	+	Unaltered.[6]	,,
36	E. W.	6	F.	5	92	3	0	0	0	?	0	0	+	...	,,
37	H. J.	13	M.	11	80·5	8·5	0	0	0	?	+	28	—	99° two evenings.	,,
38	H. W.	41	M.	20	65	15	0	0	0	?	+	30	+	Slightly higher two evenings	Stationary.
39	T. M. D.	19	M.	33	58	9	0	0	0	5 weeks.	+	16	+	Unaltered.	Improved.
40	G. S.	20	M.	10	70	20	0	0	0	3 months.	+	7	—	Unaltered.	,,
41	B. W.	21	F.	10	68	22	0	0	0	5 weeks.	+	50	+	Raised 1° for two evenings, then as before paracentesis.	,,
42	J. P.	58	M.	28	56	16	0	0	0	4 months.	0	0	+	...	,,
43	J. S.	16	M.	0	88	12	0	0	0	?	+	56	+	Gradual fall.[7]	,,
44	W. H.	12	M.	3	88	9	0	0	0	4 months.	0	0	+	...	,,
45	F. H.	29	M.	8	92	0	0	0	0	15 ,,	+	52 80 25	—	Unaltered.	Worse.
46	F. B.	25	F.	2	94	4	0	0	0	4 weeks.	0	0	+	...	Improved.
47	D. U.	16	F.	18	67	15	0	0	0	2 months.	0	0	+	...	,,
48	S. S.	29	M.	12	82	6	0	0	+	?	0	0	+	...	Death (tuberculous peritonitis).
49	J. J. S.	37	M.	1·2	10	4·8	80·2	3·8	0	6 weeks.	0	0	+	...	Improved.
50	F. M.	27	M.	58·5	13·25	24	2·5	1·75	0	?	0	0	+	Higher for 12 days after exploration.	,,

[5] Admitted two days previously. [6] Pyrexia for nine months after paracentesis. [7] Admitted two days previously.

TABLE IV.—*Two Cases of Hydropneumothorax (Tubercle Bacilli were Present in the Sputum of both Cases).*

51	A. S.	35	M.	15	54	31	0	0	0	?	+	75	+	Higher (99° before, 101° after paracentesis).	Death 19 days later.
52	W. K.	27	M.	6	68	26	0	0	+	4 days.	+	40	—	+ for 2 days.	Worse.

Explanation of Tables.

P, neutrophilic polymorphonuclear cell.
S, small mononuclear cell.
L, large mononuclear cell; includes the large lymphocyte and the endothelial cell.
E, coarsely granular eosinophilic cell.
B, basophilic cell. The numbers of cells are percentages.
Paracentesis +, paracentesis performed.
Paracentesis 0, paracentesis not performed. In these cases a small quantity of fluid was removed for examination.

T.B. +, tubercle bacilli demonstrated.
T.B. 0, tubercle bacilli not demonstrated.
The duration of an effusion before examination is inferred from the history of the patient. In many cases its accuracy is not certain.
Temperature + signifies temperature above 98·6° F.
,, — ,, ,, not above 98·6° F.
C.P.T. signifies chronic pulmonary tuberculosis.

TABLE V.—*Six Cases of Mediastinal Neoplasm.*

No. of case.	Initials.	Age.	Sex.	Cells in pleural fluid. P.	S.	L.	E.	B.	Duration.	Paracentesis.	Amount in ounces.	Temperature before paracentesis.	Temperature after paracentesis.	Diagnosis.
53	A. H. 11 weeks later. 10 days later.	40	M.	0 10 2	44 42 96	56 48 2	0 0 0	0 0 0	?	+	60	−	+ for 2 days.	Lymphosarcoma, mediastinal, involving left pleura.
54	T. G.	46	M.	46	41·75	12·25	0	0	?	+	30	−	+ for one evening.	Ditto, involving right pleura.
55	E. S.	32	M.	9·5	83·5	7	0	0	?	+	14	+	Unaltered.	Ditto, involving left pleura.
56	A. H.	35	M.	9	81	10	0	0	?	+	50 60 60	+	,,	Lymphadenoma, retroperitoneal and mediastinal.
57	J. B.	40	F.	18	20	22	40	0	?	+	40 18	+	Higher for 10 days.	Carcinoma, left lung and mediastinum.
58	E. P.	56	F.	75	20	5	0	0	?	0	0	+	—	(*a*) Lymphosarcoma. (*b*) Septic pneumonia.

TABLE VI.—*Two Cases Associated with Cardiac and Renal Disease Respectively.*

59	H. A.	68	M.	13	24	63	0	0	?	+	53	−	—	Arterio-sclerosis. Heart failure.
60	P. M.	52	M.	24	55	20	0	1	?	+	80	−	—	Chronic interstitial nephritis.

TABLE VII.—*Average Cell Counts in each Group (Groups 1 to 5).*

—	P.	S.	L.	E.	B.
Group 1 (tubercle bacilli in sputum)	19·6	67·6	12·7	0·1	0
,, 2 (clinically pulmonary tuberculosis)	11·4	76·7	11·9	0	0
,, 3 (no evidence of pulmonary tuberculosis)	12·0	73·9	10·1	3·75	0·25
,, 4 (hydropneumothorax)	10·5	61·0	28·5	0	0
,, 5* (neoplasmata)	13·5	58·3	22·5	5·7	0

* Case 58 is not included in this average.

TABLE VIII.—*Condition of Patients on Discharge from Hospital.*

A. *Pleurisy complicated by Pulmonary Tuberculosis (Groups 1 and 2).*

Paracentesis performed	(14)	Paracentesis not performed	(14)
Improved	7	Improved	7
Stationary	4	Stationary	1
Worse	1	Worse	3
Died	2	Died	3

B. *Pleurisy uncomplicated by Pulmonary Tuberculosis (Group 3).*

Paracentesis performed	(11)	Paracentesis not performed	(11)
Improved	9	Improved	10
Stationary	1	Stationary	0
Worse	1	Worse	0
Died	0	Died	1

Note.—The death in Group B was from acute tuberculosis; the peritoneum was involved as well as the pleura. Several cases in Group A had extensive and active pulmonary disease at the time of aspiration.

taking the serum from the effusion of a patient suffering from acute serofibrinous pleurisy and injecting it subcutaneously into cases of chronic tuberculous pleurisy. Heteroserotherapy has been used at Frimley Sanatorium[6] in a small series of advanced cases of pulmonary tuberculosis. In order to avoid the loss of constituents of the effusion or their destruction by heat the pleural fluid for the injection was citrated, and its sterilisation was effected by carbolic acid. The results were encouraging.

The writer has been unable to discover any published statistics on the immunity reactions of tuberculous pleural effusions (see note at end). In 1911, at the Brompton Hospital, the tuberculo-opsonic index was worked out in a small series of pleural effusions; the results are given in Table IX. In the majority of tuberculous cases the opsonic index of the fluid was lower than that of the blood. Of those in which the index was higher in the fluid, two cases were recent and a third had been aspirated three days previously. These figures suggest that a recent tuberculous pleural effusion may be rich in antibodies, and that these may be lost to a large extent in the course of time.

TABLE IX.—*The Tuberculo-opsonic Index of 18 Pleural Effusions.*

A. *Cases with Tubercle Bacilli in the Sputum.*

No.	Clinical diagnosis.	Tuberculo-opsonic index. Blood.	Fluid.
1	Chronic pulmonary tuberculosis. ,, ,, 3 days later.	1·30 0·40	0·45 0·90
2	Chronic pulmonary tuberculosis.	1·20	1·10
3	,, ,,	0·70	0·64
4	,, ,,	0·93	0·71
5	C. P. T. hydropneumothorax (recent).	1·10 0·95	1·25 1·05
6	C. P. T. hydropneumothorax (old).	1·09	0·25
7	,, ,,	0·89	0·44
8	C. P. T. and mediastinal sarcoma.	0·90	1·27

Remarks.—Case 1.—Paracentesis, 33 oz. 2. Recent. 5. Tubercle bacilli found in effusion on both occasions. 8. Recent.

B. *Doubtful Tuberculous and Non-tuberculous Cases.*

9	Acute tuberculous pleurisy.	1·50	0·80
10	? nature; larynx probably tuberculous.	0·84	0·61
11	Polyserositis.	1·32	0·60
12	C. P. T.	1·60	0·90
13	? tuberculous.	1·06	0·73
14	? N. P. S. of tuberculosis.	1·11	1·03
15	Chronic renal disease: hydrothorax.	0·90	0·90
16	Mediastinal lymphosarcoma.	1·10	0·46
17	,, ,,	1·07	1·10
18	,, ,,	0·90	0·70

Remarks.—9. Recent. 12. Autopsy held. 15. Autopsy held. 17. Fluid aspirated also four months previously. 18. Specimen of effusion obtained 14 hours after death.

An attempt was made to discover the effects of paracentesis from a study of the notes of the series of cases of which the cytology has already been discussed. Points especially looked for were changes in the temperature, pulse-rate, and weight of the patient; his condition on discharge from hospital was noted.

Effect on Temperature, Pulse-rate, and Body-weight.

In the majority of cases little or no alteration in the temperature chart occurred as the result of paracentesis. In most cases pyrexia was of two or three months' duration, whether the fluid had been withdrawn or not. In one (Case 35) a high temperature was recorded for nine months after aspiration. A fall in temperature following the withdrawal of fluid occurred in a few instances, the most striking being Cases 15 and 33. In the former it fell to 98·6° a few hours after aspiration,

in the latter to 99° on the day following it, in both remaining about normal. In Cases 34 and 43, where there was a gradual fall of temperature after aspiration, the patients had been in hospital only two days before the removal of fluid; the fall in temperature may well have been due to causes other than paracentesis. In six other charts, all from cases complicated by pulmonary tuberculosis, a gradual fall of temperature was noticed, but in these a slight fall had occurred before the operation.

In 11 cases there was some rise of temperature; in three on the day only on which the pleura was punctured; in six on the following day; while in Case 8, extensive pulmonary and intestinal tuberculosis, the pyrexia continued for five days, and in Case 50, probably rheumatic, for 12 days. It is probable that the rise of temperature on the same evening is often due to a nervous cause, but the other cases may be instances of auto-intoxication, of which Dr. M. Paterson[7] states there is a danger in aspirating tuberculous pleural effusions. A similar rise of temperature, lasting one, two, and ten days respectively, occurred in three of the cases associated with growths; in these, too, it may possibly have been due to the absorption of toxins.

Pulse-rates were very variable both before and after paracentesis; no change in rate could be definitely ascribed to the operation.

In most cases the weight of the patient seemed not to be affected (beyond that resulting from the loss of fluid). In Cases 31 and 45, both uncomplicated by pulmonary tuberculosis, the patients, who had been gaining weight before, began to lose it again about the time of aspiration. In no case did a gain in weight seem clearly attributable to paracentesis.

The condition on discharge from hospital, so far as it can be summarised for each patient in one word, is shown in the tables. It shows little difference between the condition of patients on whom paracentesis had been performed and those on whom it had not been performed. No complications resulting from paracentesis, such as hæmorrhage, pneumothorax, and serous expectoration occurred, nor were any cases of sudden death noted.

Summary.

The small number of the cases investigated, and their variability in relation to both cytology and results of paracentesis, make it impossible to draw any conclusions. The following points, however, are suggested or emphasised:—

1. A predominance of polymorphonuclear neutrophilic cells occurs not uncommonly in chronic pleural effusion complicating pulmonary tuberculosis. When it occurs, in the absence of secondary infection of the fluid, it suggests the possibility of hydropneumothorax being present; probably it may occur without this complication as the result of a virulent tuberculous infection.

2. A predominance of small mononuclear cells is usual in tuberculous pleural effusions. It is not uncommon in effusions associated with neoplasms. It may occur in renal cases.

3. Effusions in which coarsely granular eosinophilic cells are found in large numbers are probably not tuberculous.

4. Basophilic cells occur rarely, and only in small numbers.

On theoretical grounds it seems better to reserve paracentesis for the relief of urgent symptoms. In the analysis of this series of cases no clear evidence is obtained either in favour of or against paracentesis.

For permission to use the pathological records I am indebted to Dr. A. C. Inman, superintendent of the laboratories at Brompton Hospital. To him and to Dr. Roodhouse Gloyne, pathologist to the City of London Hospital for Diseases of the Chest, my thanks are due for suggestions and advice.

Note.—Since the above was written my attention has been drawn to two reports on immunity reactions obtained in small numbers of tuberculous pleural effusions. In one[8] the complement-fixation test for tuberculosis was done on the sera of four primary pleural effusions in which there was cytological evidence of tuberculosis. The results were positive in all cases. The blood serums of these patients were negative in two cases; in the other two positive, but less strongly so than those in the effusions. In the other[9] the precipitin reaction for tuberculosis was done on 22 cases with the following results:—

In 4 known tuberculous cases reaction was	positive in 3. negative in 1.
In 14 probably tuberculous cases reaction was	positive in 5. doubtful in 2. negative in 7.
In 4 non-tuberculous controls reaction was	negative in 4.

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THE PERIODICITY OF INFLUENZA.

BY B. E. SPEAR, F.S.S.

TWO articles have recently appeared in THE LANCET dealing with the periodicity of influenza epidemics. In the first article Dr. John Brownlee (Nov. 8th, 1919, p. 856) stated that he had deduced from analysis of influenza mortality, by the method of the periodogram, that epidemics recurred in 33-week periods; and he was thus led to forecast an epidemic at the end of January or in February of this year. Dr. C. O. Stallybrass, in the issue of Feb. 14th, finds exemplification of Dr. Brownlee's conclusions in the Liverpool experience since 1890, and, in addition, evidence therein of different strains of influenza bacilli with varying periodicity.

The method of analysis upon which Dr. Brownlee relies can, however, only yield correct results when the data to which it is applied can be described as recurring "waves" of approximately *uniform* "amplitude"; and data conforming to this requirement are practically non-existent in vital statistics. No more unsuitable material for analysis by the periodogram method could have been selected than the highly fluctuating figures of influenza mortality; and, as will be shown, the periodicity of 33 weeks of Dr. Brownlee has no existence in fact.

The weekly deaths in London from influenza for 1890–1919 (the period to which Dr. Stallybrass refers) are readily accessible, being contained in the weekly returns of the Registrar-General for those years, and will serve to illustrate the facts. They are not likely to differ in any material degree from

the Liverpool records. The influenza prevalences are readily located, and the week of maximum mortality noted.

Tests of Periodicity.

Two simple tests have been applied to demonstrate the existence or non-existence of periodicity.

1. The year being divided into 13 four-weekly periods, the frequency with which the observed week of maximum mortality falls into one or other of the 13 groups has been tabulated. The result is shown graphically in Fig. 1. It will be seen that the climax of an influenza prevalence falls more frequently in the second and third four-weekly period than in others—i.e., the months of February and March. If there had been a periodicity of 33 weeks there would have been an equal number of these climaxes in each of the 13 divisions of the year. This test shows, therefore, that there is no period of 33 weeks, but that there is an approximation to a seasonal or annual period; and that the time mentioned by Dr. Brownlee in his forecast—the end of January or in February—is in any year the most likely time for an influenza prevalence.

2. The interval of time by which successive climaxes are separated would, if there were a periodicity of 33 weeks, on an average approximate to this period. There were, in the 30 years 1890–1919, 32 of these climaxes or "peaks" in the influenza mortality; and the frequency of intervals of different lengths which separate adjacent "peaks" is graphically illustrated in Fig. 2.

FIG. 1.

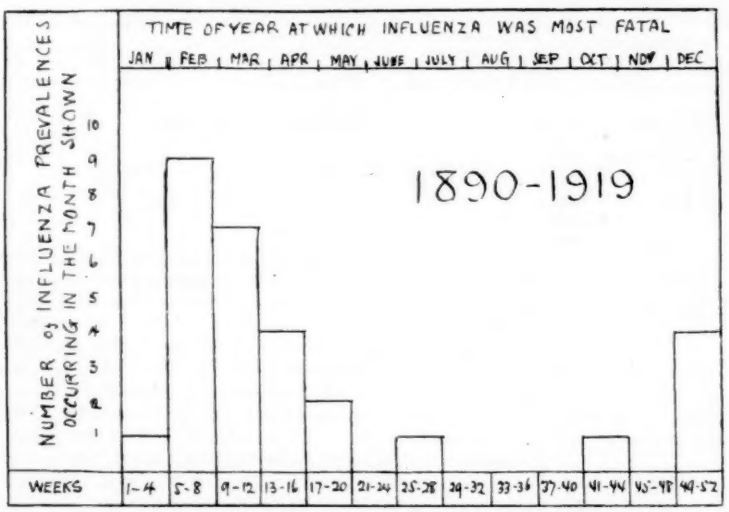
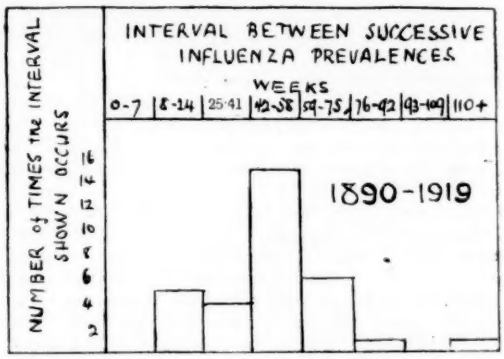


FIG. 2.



It is clear that, were there any periodicity of 33 weeks, there would be a large number of instances in which the interval would fall in the group containing intervals of 25–41 weeks, to which 33 weeks is central. The graph shows, in fact, that a far greater number belong to the group which contains the solar year.

Both tests thus demonstrate the non-existence of the 33-week periodicity.

How then is the result found by Dr. Brownlee by the periodogram method to be accounted for? The explanation lies in the fact that the "amplitudes" of the successive "waves" of influenza mortality—the number of deaths during the week of climax—in certain of the epidemics in this period are so great as to overshadow, and practically to eliminate, the smaller outbreaks when the data are subjected to analysis by the periodogram method. In the series of years 1890–99, to which Dr. Stallybrass refers as specifically illustrative of the 33-week periodicity, the mortality in the third week of 1892 (506 deaths), the twentieth week of 1891 (319 deaths), and the tenth week of 1895 (473 deaths) overshadowed all the other climaxes. The distances between these epidemics were 35 and 99 weeks respectively; and obviously if the series of years be cut up into periods of 33 weeks the mass of the 1891, 1892, and 1895 epidemics will fall into approximately the same relative position in the particular 33-week section to which each belongs. Hence the high "amplitude" obtained by Dr. Brownlee for this *spurious* period.

The interval between the two epidemics of 1918 in New York was 30 weeks; in Gothenburg only 10 weeks. Between these two extremes all kinds of intervals occurred in other towns.

In conclusion, it may be added that while no differentiation has been made above between the influenza mortality of pandemic years and intercurrent prevalences, it is believed that the causation of the two types is different; nevertheless, so far as periodicity is concerned, if regard be limited to the influenza pandemics of 1890–95, 1899–1900, 1908–09, and 1918–19 the average interval is 50 weeks—i.e., about a year.

THE LATE DR. J. REES GABE.—John Rees Gabe, who died at his residence in Mecklenburg-square, London, on March 2nd, in his sixty-eighth year, was a student at the London Hospital and became L.S.A. in 1876, taking the M.R.C.S. Eng. three years later. After holding a junior appointment at the Poplar Hospital he was for two years clinical assistant at the London Hospital, and afterwards at the Hospital for Sick Children, Great Ormond-street. In 1885 he passed the M.D. Brux. examination with distinction, and became later president of the Brussels Medical Graduates' Association. Dr. Gabe held the posts of physician to the London Dispensary, to the General Post Office, Mount Pleasant, and to the National Society for the Prevention of Cruelty to Children. He was also public vaccinator for Holborn and divisional surgeon to the Metropolitan Police.

A NOTE ON THE USE OF UNIVALENT SERUM IN THE TREATMENT OF CEREBRO-SPINAL FEVER.

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THE ease of diagnosis of the type organism of cerebro-spinal fever by simple and rapid laboratory methods and the remarkable possibilities of cure in the treatment of this disease by antimeningococcic type serum are not yet as widely known as they deserve to be. Reference to Case 2 described hereunder will, I think, show that, at least as regards type 1 of the disease, there is some justification for the hope that it is on these lines that treatment of cerebro-spinal fever is likely to meet with successful results. This article refers more particularly to the first of the four types described by Gordon.

Gordon's Four Types of Meningococcus.

Among the advances made by medical science during the war not the least important is Gordon's discovery of the four types of the meningococcus. Formerly we were content to classify the cases clinically as "fulminating," "acute," and "subacute" or "chronic." Now we have a bacteriological classification of the disease into cerebro-spinal fever types 1, 2, 3, and 4, and with a little more experience a fairly reliable clinical classification corresponding to these types may also be arrived at.

A few observations on this point have already been made. Thus Kennedy and Worster Drought[1] investigated the relation of the type of meningococcus to the clinical picture in 22 cases and found that 8 cases infected with Gordon's type 1 were all gravely ill, with a fatal issue in 6 cases; that of 6 cases with type 3 some were severe and some moderately severe, and that the 8 cases of type 2 all recovered; of type 4 there were no cases recorded. The observations suggest that types 1 and 3 (Nicolle type A) are more virulent as regards the meninges, and that types 2 and 4 (Nicolle type B or parameningococcus) are specially prone to cause septicæmia and extrameningeal metastases.

The evidence of other writers, such as Rolleston[2] and Adshead,[3] on the point is more conflicting and no constant relationship can be regarded as established.

The process of differentiation of the type is similar to what is already fairly well established for the enterica group of fevers—viz., typhoid, paratyphoid A, and paratyphoid B, in each of which a distinctive clinical picture is frequently obtained enabling a presumptive clinical differentiation to be made. The same can be said of the dysenterica group of bacillary dysenteries.

In the cerebro-spinal group of fevers, however, the differentiation is of vastly greater practical importance to the patient, for upon it rests the question of specific treatment by the univalent type serum, and this is prima facie the only treatment which affords a substantial prospect of success.

Illustrative Cases.

The following two cases illustrate the results which may be obtained in type 1 cerebro-spinal fever by the intrathecal injection of the specific type 1 serum. In the first case I came to the diagnosis slowly by a process of exclusion. In the second case, profiting by experience, I made the diagnosis directly on clinical grounds, and confirmed it a few hours later by a simple bacteriological agglutination test. In this latter case a single intrathecal injection of the type 1 serum cut short well-advanced cerebro-spinal fever in a single night—a rapidity of cure which I have never seen surpassed by any form of antitoxin treatment.

CASE 1.—A boy (T. J.), aged 4 years and 7 months, was admitted to the Burgh Hospital, Motherwell, on July 11th, 1919, suffering from cerebro-spinal fever of 14 days' duration.

History: Vomiting at onset and subsequently at intervals; pyrexia each day; gradually increasing retraction of head. On admission the boy was thin, fretful, and looked ill; considerable retraction of head and rigidity of muscles of back of neck; Kernig's sign positive. Tâche cérébrale present. Pupils equal and normal. No eruption. Lumbar puncture produced about 30 c.cm. turbid cerebro-spinal fluid under pressure. Microscopical examination showed numerous polymorphs and typical Gram-negative intracellular diplococci.

Course of the disease.—This can be followed by reference to Chart I. My laboratory was not in working order at the time, and I conveyed the cerebro-spinal fluid for examination to Dr. W. R. Wiseman, of the Glasgow Municipal Laboratory. The meningococcus was grown by Dr. Wiseman, and types 3 and 4 excluded by agglutination tests. Unfortunately, he was unable to obtain agglutinating serum for types 1 and 2, and he reported that presumably the organism belonged to one of the latter types. I had meanwhile given empirically one dose of multivalent serum and two doses of type 2 serum intrathecally, but absolutely without result. Assuming, therefore, that I was dealing with type 1 of the disease I gave 25 c.cm. (Lister Institute) type 1 serum intrathecally on July 24th. By this time the child was in the twenty-seventh day of disease. He could not have weighed more than 10 lb., was horribly emaciated, and in extremis. Nevertheless, he improved visibly the following day. I repeated the injection two days later, and his temperature became normal on the following day and general improvement set in. On July 30th I gave 25 c.cm. (R.A.M. College) type 1 serum, and this, unfortunately, was followed by symptoms which were possibly anaphylactic in character—pyrexia, purpura hæmorrhagica, black stools, and retraction of head. The child was extremely feeble, and I think I have never seen anyone so ill as he was then recover. Improvement set in again on August 17th, when he began to talk and take notice. He was eventually discharged, physically in splendid condition and mentally bright, alert, and intelligent on Nov. 18th. Lumbar puncture was in this case carried out 20 times between July 11th and August 16th, by which time the cerebro-spinal fluid was perfectly clear.

The diagnosis in the above case was strongly presumptive of type 1, both from bacteriological findings and the results of the treatment. The next case provides a striking similarity as regards symptoms and a strong contrast in diagnosis, treatment, and course.

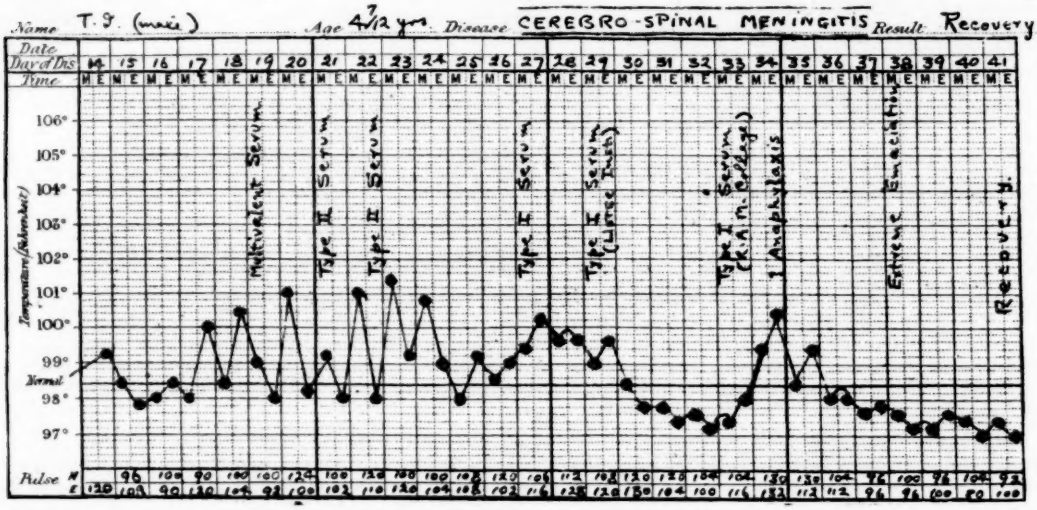
CASE 2.—A male child (J. McD.), aged 1 year and 3 months, was admitted to the Burgh Hospital, Motherwell, on Nov. 20th (the thirteenth day of illness) suffering from cerebro-spinal fever.

History: Vomiting at onset; pyrexia each time examined; gradually increasing retraction of head. On admission the child was pale, wasted, very cross, and peevish; well-marked retraction of head. Tâche cérébrale present; Kernig's sign doubtful. Pupils normal and equal. No eruption. Lumbar puncture confirmed the diagnosis of cerebro-spinal fever.

Cultural and agglutination tests.—A meningococcus was grown which was agglutinated strongly by type 1 serum and not at all by types 2, 3, and 4 (R.A.M. College) or by normal human blood serum.

Treatment and course.—(See Chart II.) Patient's temperature on admission was 102° F. and lumbar puncture

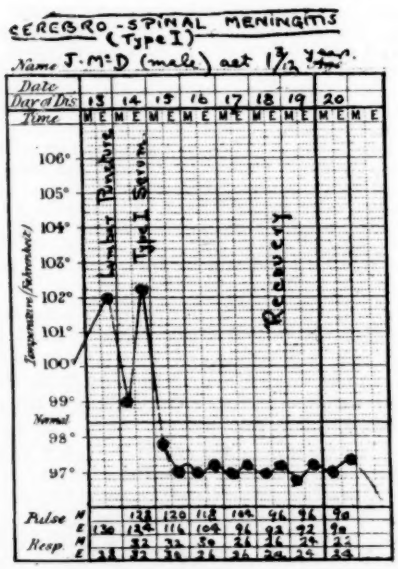
CHART I.



Type 1 disease not diagnosed until twenty-seventh day, by which time the child was desperately ill. Note favourable effect of two doses type 1 (Lister Institute) serum. Further injection of type 1 serum (R.A.M. Coll.) followed by severe symptoms, possibly anaphylactic in character. Extreme emaciation; gradual recovery. Note uselessness of multivalent and type 2 serum in this case.

gave about 25 c.cm. turbid fluid under pressure; this fluid was cultured. The following evening the temperature was 102·2 and lumbar puncture gave about 10 c.cm. turbid fluid. The similarity of his symptoms to those of Case 1 induced me to give an intrathecal injection of 20 c.cm. (Lister Institute) type 1 serum.

CHART II.



C.-S.M. Type 1. Admitted on thirteenth day of disease. Lumbar puncture yielded 30 c.cm. turbid fluid. Type 1 serum injected on following evening. Note fall of temperature by crisis and complete arrest of the disease.

(A few drops of the serum were saved for agglutination tests.) The temperature fell by crisis the following day, and the child appeared well in the morning and was actually sitting up and moving about his cot. He was up and toddling about the ward within two days of the injection; perfectly well; appetite was voracious and sleep at night sound. He was discharged on Dec. 2nd.

The diagnosis of the type in this case was confirmed a few hours after the injection had been given by microscopic agglutination tests of the meningococcus obtained from the fluid against the type 1 serum injected, and subsequently against all four types of (R.A.M. College) serum as given in the table. The results were definite and unmistakable. They appear to show that all that is necessary in practice is to test the organism isolated against a low dilution (e.g., 1 : 30) of each of the type serums, provided the latter are of high titre. The reacting serum gives the diagnosis of type.

Agglutination Tests (Microscopic Method).

Organism: Meningococcus cultivated from cerebro-spinal fluid of Case 2.

Serum.	Dilution.	Result.	
		1 hour.	24 hours.
Antimeningococcus univalent:			
Type 1 (Lister Institute)	1 : 30	+ + +	+ + +
Type 1 (R.A.M.C.) titre 1 : 800	1 : 30	+ +	+ + +
	1 : 80	+	+ +
	1 : 160	+	+ +
	1 : 400	+	+ +
	1 : 800	+	+
Type 2 (R.A.M.C.) titre 1 : 800	1 : 30	–	–
Type 3 (R.A.M.C.) titre 1 : 800	1 : 30	–	–
Type 4 (R.A.M.C.) titre 1 : 800	1 : 30	–	–
Normal human blood (H.S.B.)	1 : 30	–	–

Plus signs denote clumping and cessation of Brownian movement: + + + very marked, + + marked, + distinct.

If group agglutinins are present in the non-reacting serums they do not appear to be sufficiently strong to vitiate the test.

Bacteriological Technique Required.

The bacteriological technique and apparatus required is simple. The tests can be readily carried out in any fever hospital or other labora-

tory which is equipped for the examination of throat swabs for diphtheria.

The culture of the meningococcus from cerebro-spinal fluid is supposed to require special protein-enriched culture media from which plate cultures must be made. In the above case I obtained copious primary growths within 24 hours on ordinary coagulated blood serum slopes, such as are used for the culture of the diphtheria bacillus from swabs. The following conditions should, however, be observed: (1) the cerebro-spinal fluid should not be allowed to become chilled before the culture tubes are inoculated; (2) the culture tubes should preferably be inoculated and incubated within ten minutes of the removal of the cerebro-spinal fluid from the body; (3) the culture tubes should be warmed to blood heat before the inoculation by placing them in warm water.

The agglutination of the meningococcus for practical test purposes, given a high-titre serum, does not seem to require the elaborate apparatus usually described, such as a water-bath regulated to 55° C. and the various tubes, pipettes, and racks required for the macroscopic method. The ordinary microscopic method, as used in the old Widal test, appears to be good enough. The dilutions can be made with sufficient accuracy by the platinum loop method. A dilution of 1 in 10 is obtained by mixing one loopful of serum with nine loopfuls of normal saline. By adding to one loopful of this dilution two loopfuls of the meningococcal emulsion on a cover-glass the organisms are suspended in a dilution of 1 in 30 of the ordinary serum. The cover-glass is inverted over the ordinary "cavity" slide, and the preparation kept in the incubator at 37° C. and examined after one hour. With a high-titre serum—say, a titre of 1 : 800—clumping of the organism and cessation of Brownian movement is well marked within that time in the case of the appropriate type serum; while in the case of the other type serums or a normal serum control the test is quite negative.

Remarks.

In view of the practical importance of the subject matter of this article, I have considered it advisable to publish this preliminary communication without waiting for confirmation from a large series of cases. The method of diagnosis and treatment described can be carried out in nearly every fever hospital in the country with the minimum trouble, and possibly with great saving of life.

Supplies of type antimeningococcic serum do not appear to be yet available in the ordinary market. I obtained phials of the serum for treatment from the Lister Institute, London, and small phials for agglutination purposes from R.A.M. College, London.

References.—1. Kennedy and Worster Drought: Brit. Med. Jour., 1917, i., 261. 2. Rolleston: THE LANCET, 1919, i., 546. 3. G. P. Adshead: Treatment of Cerebro-spinal Meningitis by Anti-meningococcic Serum at Royal Naval Hospital, Haslar, Special Report Series No. 17, Medical Research Committee.

BRIGHTON AND INDIAN WAR MEMORIAL.—As the contribution guaranteed by the Indian Government is limited to £4000, the original proposal at Brighton by Indians to offer to the corporation a "rest-house" as a memorial of their gratitude for the hospitality shown by the inhabitants of Brighton to the wounded Indian soldiers at the Royal Pavilion Hospital cannot be carried out. As an alternative, however, Sir John Otter, chairman of the Indian Memorial Committee, who has plenary authority to settle the matter, has offered to erect a memorial gateway and screen at the southern entrance of the Royal Pavilion and the corporation has accepted it.

NOTES ON THE ÆTIOLOGY OF EFFORT SYNDROME.

BY R. GORDON BARLOW, M.D. LIVERP.,
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THOSE who are acquainted with the Medical Research Committee's "Reports upon Soldiers Returned as Cases of Disordered Action of the Heart (D.A.H.), or Valvular Disease of the Heart (V.D.H.)," and with "The Soldier's Heart and the Effort Syndrome," by Dr. Thomas Lewis, may consider that there is little profit in putting forward further statistics and observations on this subject. Experience seems to indicate, however, that a large number of the members of the profession are still unacquainted with the results of the investigations that have been made at the Military Heart Centres, and the number of soldiers contained in these groups of "heart cases" is so large that the study of a new set of cases with a view to arriving at the truth regarding the ætiology of the conditions, and drawing what conclusions one may for prevention and treatment, seems amply justified.

It was estimated that at least 70,000 soldiers reporting sick had been classified as cardio-vascular cases up to the end of May, 1918, and a steady stream has continued to pass through the hospitals since then. The majority of these cases falls into the group D.A.H. or "effort syndrome." Besides the military cases there are, no doubt, considerable numbers of persons suffering from this condition who have not come under observation in the army, as the condition is by no means peculiar to soldiers.

The impressions given below are based on over 1200 cases. The figures are the result of the analysis of the records of 382 consecutive cases, all of which were ultimately classified as D.A.H., though many of them had been marked V.D.H. at some period of their military career.

Method of Investigation.

A short explanation of the method of investigation into the ætiology is necessary.

Every patient was carefully questioned regarding his health from earliest childhood. After being given an opportunity of volunteering information, he was asked directly if he had had any of the common illnesses (mentioned by name) at any time in his life. He was then questioned as to his ability to play football and other boys' games, and the character of his civil employment and his habits with regard to exercise between school and enlistment were noted. Record was made of the category in which he joined and of any previous rejection for the navy or army. A statement of the nature of the training received before proceeding on service was obtained, and direct questions were asked as to the severity of the physical drills and route marching. By this means a fairly accurate estimate of each man's capacity for exercise was made. Of course, the evidence thus elicited rested entirely on the patients' statements, but there rarely seemed any reason to doubt them, and what errors there may have been in the histories were due rather to want of recollection than to intentional suppression of facts or false statements.

In a few cases there was documentary evidence of the existence of tachycardia or other signs of abnormality of function of the cardio-vascular system on enlistment.

When with nothing to suggest that any degree of effort syndrome existed before they went on service men developed the condition later, careful inquiry was made as to the date and circumstances under which the symptoms first made their appearance, and for any illness or other casualty that could reasonably be considered as causal.

Investigating along these lines, it was found that more than half the patients had a greater or lesser limitation of power of responding to exercise before going on active service. Many of them could trace this condition to some definite illness, generally in childhood, and a considerable number of them had been told that they had "weak hearts," and had been advised to avoid all forms of strenuous exertion. The majority of these men were taken into the army in low categories and remained on the lighter forms of duty, though a few had been graded up and had carried on with heavy work for varying periods, ultimately breaking down as the result of the supervention of some infection such as trench fever, malaria, or sand-fly fever.

As nearly all the cases under consideration were examined after the cessation of hostilities, and many of them were youths who had seen no fighting and had done little strenuous training, the importance of the recognition of the "constitutional" origin of so many of these cases is obvious.

Classification of Cases.

For purposes of classification the cases have been divided into two groups:—

Group 1, *constitutional*, with history of the existence of the condition before enlistment or on commencement of physical training.

Group 2, *acquired*, with symptoms developing after a fair period of training well tolerated, or of heavy work performed without distress.

Of the 382 cases analysed, 196 fell into Group 1 and 186 into Group 2. No definite origin could be traced in 102 of the former; 47 were ascribed to rheumatic infections, comprising acute articular rheumatism, chorea, and severe recurrent sore-throat; 43 dated from various other infections; and in 4 cases the condition appeared to be merely part of a well-marked constitutional neurosis.

It will be observed that nearly one-quarter of the cases was attributed to rheumatic infection, and it should be understood that a mere statement by the patient that he had had "rheumatism" was not considered as sufficient to warrant inclusion in this class, only cases which, upon inquiry, appeared to be of true rheumatic infection being included. Pulmonary and pleural diseases formed a large part of the "other infections."

In Group 2 a more detailed analysis was possible, and, for convenience, the results have been put into the form of a table, thus:—

Analysis of Group 2.

Sub-group.	No. of cases.	Percentage.
Rheumatic infections	7	3·76
Pulmonary infections	16	8·60
Influenza	29	15·59
P.U.O. and trench fever	17	9·15
Gastro-intestinal infections	17	9·15
Malaria	12	6·45
Shell-gas poisoning	19	10·20
Wounds	10	5·38
Nephritis	1	0·54
Other infections	14	7·52
Neurotic	5	2·69
Undiscovered origin	39	20·97
	186	100 00

It will be seen from this table that the origin of the effort syndrome was traceable directly to infection of one kind or another in by far the majority of the cases, and also that rheumatic infection was a comparatively rare cause in the acquired type. On the other hand, influenza was a fairly common cause, and many of the most typical cases were to be found in this group.

Most of the wounds that were regarded as producing effort syndrome were ordinary flesh wounds of slight or moderate degree; none had been severe, but all entailed a fairly considerable period of hospital treatment and light duty, as did also the cases of shell-gas poisoning, a point of importance in the ætiology of this condition of effort syndrome which will be referred to later.

The gastro-intestinal cases consisted chiefly of patients whose D.A.H. symptoms dated from dysentery or "clinical dysentery," but there were two cases of appendicitis, one of the chronic variety in which the effort syndrome cleared up soon after the operation for removal of the appendix, and the other following drainage of an appendix abscess.

One of the five cases classed as "neurotic" was an orderly in a home hospital who had suffered for some months from chronic rhinitis, and attributed his D.A.H. symptoms to this affection combined with a long period of night duty. He was very depressed, became tearful without occasion, did not associate with the other patients or take part in the recreations of the hospital, and complained of terrifying dreams and fear of darkness; in addition, he suffered from præcordial pain and developed breathlessness and tachycardia on slight exertion. He had nothing in his history to suggest that either condition existed before enlistment. In the other four cases the condition dated from being blown up, or buried, or under heavy bombardment.

Effort Syndrome not a Functional Neurosis.

It has been suggested that the effort syndrome ought to be regarded as a condition of functional neurosis. There certainly is a neurotic element about a great many of the patients, as judged by such signs as exaggerated tendon reflexes, muscular tremors and blepharospasm, and such symptoms as subjective pains, local hyperæsthesia and hyperalgesia, terrifying dreams, fear of darkness and loneliness, fits of depression and emotional outbursts, and impairment of memory. No fewer than 89 of the 382 cases under review admitted that they were subject to terrifying dreams. Of this number 51 had dreams of falling. Marked exaggeration of knee-jerks and coarse muscular tremors were frequently met with, and complaints of severe joint pains were often made in cases in which no signs of disease or only slight rheumatoid changes could be detected. Two patients had hysterical fits, but no patient had paralysis of any sort or anæsthetic areas.

In spite of the presence of neurotic manifestations in so many of these cases it does not seem right to regard the effort syndrome as a neurosis. In the first place, no ground for classifying them as neurotic was found in more than three-quarters of the cases. Secondly, some degree of hypersensitiveness of the nervous system was so common among soldiers of all classes (as was only to be expected) that it can scarcely be looked upon as abnormal. During the period of active warfare it was a very common experience in both medical and surgical wards to hear men shouting in their sleep in a way that clearly showed they were dreaming of terrifying incidents, and a very large number of the patients were to be found grinding their teeth incessantly during sleep. Again, soldiers have been notoriously bad subjects for anæsthesia, mainly on account of their tendency to violent excitement during induction. Such disturbances as are indicated by these signs might well be expected to lead to a magnification of subjective symptoms; this was met with in many of the conditions seen in military hospitals, as, for example, in the persistent pains of trench fever, myalgia, rheumatoid arthritis, and the scars of some gunshot wounds, as well as in the præcordial pain, tachycardia, and dyspnœa of D.A.H. Yet no one would go so far as to dismiss these other conditions as purely neurotic, so that there is no justification for relegating the effort syndrome to that scrap-heap.

It is generally admitted that excessive smoking has a deleterious effect on the heart's functions, and many medical officers have expressed a firm

belief that this has been the cause of D.A.H. in the majority of soldiers suffering from the condition. A diagnosis of "smoker's heart" is also very popular in the irritable heart of civil practice, both with the profession and with the laity. Probably no one will deny that army life has led to a considerable increase in the amount of smoking, but it is common experience that an active outdoor life greatly increases a man's tolerance for tobacco, because it induces rapid elimination of the toxin, so that the clerk who found five cigarettes a day quite enough for him when engaged on his sedentary work could smoke 15 or 20 without feeling any ill-effects whatever whilst on active service. At the Heart Centres every patient was asked how much tobacco he habitually used, and, as it was recognised that there is always a tendency to underestimate one's consumption, the largest quantity to which the man could be persuaded to admit was recorded as his average. The figures thus obtained showed that excessive smoking was rare, the average in the majority of cases being from six to eight cigarettes daily. Quite a considerable number of patients never smoked or had given up the habit for a long time. Observation of the patients under various conditions at all times of the day gave no reason to doubt their statements in this connexion, and there seems no justification for the view that attributes a main part to tobacco in the production of the effort syndrome. On the other hand, many patients admitted that they found their symptoms were increased by heavy smoking after they had once been established, and some had cut down their tobacco, a course that resulted in some mitigation of symptoms in some cases.

Infection as Principal Cause of Effort Syndrome.

Turning again to a general consideration of the evidence provided by the case-records, it seems quite clear that the principal cause of effort syndrome is infection. Though rheumatic infection predominated in the "constitutional" cases, almost any infection may produce the condition. Symptoms usually made themselves felt after convalescence started, and usually resulted in the patient returning to bed or at least refraining from any form of exercise. This is a point of the greatest importance. Anyone who has just suffered from an acute toxic state is liable to experience limitation of function of all the structures that have suffered in the general poisoning, and this limitation is likely to persist if these structures are not toned up to their normal state by judicious exercise. The old bogey that every heart condition must be treated by rest in bed has led to the adoption of this line of treatment in many cases where symptoms are referred to that organ on slender grounds, with unfortunate results for the patient. Numerous patients stated that, having reported that they had slight pain in the heart region, or giddiness, or felt their heart "bumping" when they first began to get about after an acute illness, they were examined and told they had heart trouble, and were then sent back to bed for several weeks. These men usually found that their symptoms were worse rather than better when they eventually started to get about again, and they became cases of established D.A.H. Other patients, again, having complained of no symptoms, were told they had heart trouble on examination by medical officers, and were put to bed or told to avoid any exertion. Such treatment often resulted in the patients discovering that they had tachycardia or slight breathlessness on exertion, or an occasional "missed beat" when lying in bed. The belief that serious heart mischief existed, having once been established, was very difficult to dispel, though not a few of these "manufactured" heart cases (especially those eligible for demobilisation) declared that they were sure there was nothing wrong with their hearts and were indignant at their transfer to a Heart Centre.

Goodhart says, "It is a bad day for a man when he first knows he has a heart," and this is especially true in the case of an irritable heart without structural changes. The importance of the correct assessment of symptoms arising during convalescence, and the proper management of that state, cannot be too strongly urged, in the light of the experience gained in dealing with the effort syndrome. It is exercise, judicially graduated, that is to prevent the development of D.A.H. after acute infections, and persistent treatment on the same lines to effect its cure in cases where it has been established, not rest and avoidance of all physical exertion.

One other point must be mentioned to complete these observations. Although the pursuit of physical exercise is generally regarded as a great characteristic of the people of this country, it is surprising to find what a great number of boys and men take practically no exercise. There is much too strong a tendency to excuse boys and girls from physical exercise and games because they are "weakly" or have "weak hearts," and there are far too many men who are content to watch a football match rather than play themselves or take exercise in some other form.

THE USE OF AUTOGENOUS BONE GRAFTS IN THE TREATMENT OF CERTAIN SIMPLE FRACTURES OF BONE.

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ASSISTANT HONORARY SURGEON, CHILDREN'S HOSPITAL, BRADFORD; SURGICAL PATHOLOGIST, ROYAL INFIRMARY, BRADFORD.

THERE are to-day very few fractures of bone in which a satisfactory length and alignment cannot be obtained without resorting to open operation. The enormous, preponderance of cases of bone fracture amongst the sum-total of wounds inflicted upon humanity during the past war has afforded great scope for originality in the introduction of newer methods of treatment and improved apparatus, which have sufficed to effect and maintain a satisfactory length and alignment not only in the case of simple fracture, but also in the most extensive type of compound and comminuted fracture. The popular war-splint, which was either Thomas's original knee-splint or some modification thereof, largely supplanted the pre-war wooden splints and plaster, and in so doing removed many objections to the latter apparatus in that the difficulty in maintaining length and alignment, the risk of compression and constriction and consequent delayed union occasioned thereby, ischæmic paralysis, and the like, were overcome.

There are still, however, a few simple fractures difficult to treat satisfactorily without open operation. These include fractures situated in the immediate neighbourhood of the hip- and shoulder-joints, which are often followed by osteo-arthritic changes unless a very accurate reduction is obtained, and spiral fracture of the lower third

of the tibia where imperfect length and alignment will lead to faulty transmission of body-weight accompanied by its attendant evils. It must be remembered that every change in the formation and function of a bone is attended by certain and definite changes in its internal architecture (Wolff's law), hence a true length and alignment are of paramount importance.

Bone Grafts; their Fate, and Advantages over Plates and Screws.

In order that a bone graft may grow and function certain conditions are essential:—

(1) The graft must be autogenous. Bone transplanted from the lower animals to man or from one individual to another lives and functions only very exceptionally.

(2) The graft must be suitably nourished. A piece of bone transplanted from one part of the body to another will continue to live if strict asepsis has been observed; there is abundant evidence to prove that it can acquire the requisite nutrition from the lymph of the part in which it is lodged until such a time as its own blood-supply becomes established.

(3) When removing the graft it is advisable to include both periosteum and endosteum, for by such means earlier vascularisation and consequent union of the graft are undoubtedly obtained.

(4) When once the graft has commenced to unite a certain amount of movement of the muscles can with advantage be allowed. By this means the correct lines of stress and strain will become established in the graft according to Wolff's law.

There are several theories to explain what actually happens to the bone graft. The important question seems to be, is the graft osteogenetic or is it not? Some hold that all the bone in the graft is absorbed, and that the new bone is formed entirely from the periosteum. This view would gain support from the work of Stiles in his sub-periosteal resection of bone for tubercular disease, and from the work of Leriche on esquillectomy for war fractures. Macewan's view that the new bone is formed by proliferation of osteoblasts within the bone itself, and is independent of the periosteum, directly contradicts the above. It seems that a solution to the controversy rests in a real understanding of what is meant by the true periosteum. If the periosteum includes the true cambium of bone—that is, the layer including Sharpey's fibres—then without a doubt such a structure is osteogenetic. Another view is that the graft is not in any way osteogenetic, but simply acts as a scaffolding which in due course is absorbed and replaced by new bone by immigration into it first of osteoclasts and later of osteoblasts from the adjacent bone. My own experience leads me to believe that all these views are in part correct, if the periosteum be taken to include the true cambium of the bone, and in cutting the necessary grafts I have included periosteum, compact bone, and endosteum.

Early and repeated skiagrams of the grafts have shown partial rarefaction only about the periphery of the graft and not a complete rarefaction, whereas new bone formation can be seen to be taking place from the graft itself.

Although many brilliant results have been obtained through the fixation of fractures by means of plates and screws, it cannot be denied that the procedure involves the introduction into the tissues of a lasting foreign body, which cannot be removed by osteoclasts and replaced by new bone. Sooner or later rarefaction of the bone takes place around the screws and the plate works loose. Pain of a boring character may occur in the bone, and, worse still, a low form of suppuration may take place even as late as four years after the introduction of the plate. This is specially prone to occur if the patient's resistance be lowered by any debilitating disease such as malaria. I removed a piece of silver wire from a patient's patella owing to suppuration occurring two and a half years after its introduction; also a plate and screw from the femur of another patient four years after its introduction, for a similar reason. I have met with other cases in which removal of the foreign body has been necessary owing either to pain, suppuration, or the plate working loose. An examination of the pus in three cases showed *Staphylococcus aureus* to be present, but in two other cases no organisms could be found either in a stained film or by culture. Further, in my experience union of the fracture has never been so rapid or natural in the cases in which plates have been used as in those in which the bone graft has been employed. Moreover, in not a few cases the introduction of a plate has been followed by non-union of the fractured bone.

On the other hand, in using a bone graft we are not dealing with a foreign body, but with living tissue which in time becomes part of the bone and in which the lines of stress and strain eventually conform according to Wolff's law. The operation for bone-grafting is certainly more extensive and involves opening up the medullary cavity, but the latter is of no moment if strict asepsis be observed. The operation for bone-grafting takes a longer time than fixation by plates and screws; the technique is more exact and difficult and requires considerable practice. The type of graft called for in the case of simple fracture is almost invariably the "sliding graft."

Operation.

The very strictest asepsis is called for in this branch of surgery, for if once infection gains access there is not only the risk of osteo-myelitis with its sequelæ becoming established, but death of the graft will certainly follow. It is advisable to give two or three inoculations of staphylococcus aureus vaccine prior to the operation. It is to-day very advisable to ascertain whether or not the patient has had malaria, because malaria exerts a very baneful influence upon the bone marrow. If any malaria is present it should be treated without delay. Operations upon bone are not so satisfactory in malarial countries as they are at home, and simple fractures do not unite so readily in malarial subjects. Similarly, if the patient has at any time suffered from syphilis it should be ascertained that he is cured, as operations upon the bones of syphilitics at any period of the disease are apt to be disappointing. All skin infections, such as acne, boils, &c., should be corrected before operation, and a careful examination of the urine undertaken in order to exclude albuminuria and glycosuria.

After having thoroughly cleansed the skin of the part the limb is emptied of blood and a tourniquet applied. In case of fracture about the shoulder and hip-joints digital pressure, if possible, should be employed. An incision is now made down to the bone and the site of the fracture thoroughly exposed. The edges and sides of the wound are carefully protected with tetracloths and the bone ends are seized with forceps. While the necessary extension is made by an assistant the ends are accurately approximated and held in position with Lane's forceps by another assistant. The graft should be wedge-shaped and made to include periosteum, compact bone, and endosteum. It is

then made to bridge the fracture, and is secured in its place by means of kangaroo tendon in the manner shown in the figure. Throughout the operation it is desirable to keep even the gloved finger out of the wound. Only boiled instruments

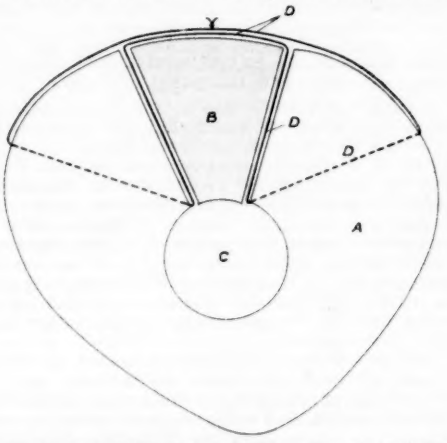

Diagram of cross-section of bone, showing how the wedge-shaped graft is made secure. A, Shaft of bone. B, Graft. C, Medullary canal. D, Kangaroo tendon.

should enter the wound, and all swabbing should be done by means of dry sterile swabs on the end of forceps. When the graft is satisfactorily fixed the soft parts should be allowed to cover it and the skin approximated with a continuous suture or Michel's clips. The limb is then put at rest on a splint, and the stitches can be removed on the tenth day.

At the end of the third week the patient may begin to use his toes or his fingers and by these means the bone graft to some small and sufficient extent begins to function, and thereby the correct lines of stress and strain crystallise out according to Wolff's law.

Remarks.

The graft has usually grown in firmly by the end of the sixth week, and at the end of the eighth week the patient may begin to use the limb. Skiagrams taken after the tenth week show the graft to be almost indistinguishable both in texture and quality from the adjacent bone.

Of a particular series, including 15 cases, two were fractures of the surgical neck of the humerus and one a fracture in the upper third of the femur. One was a fracture of the neck of the femur; this case was treated by driving a bone peg, fashioned from the tibia, through the great trochanter into the head of the bone via the neck. One case was a fracture in the upper third of the shaft of the humerus, while the remainder were spiral fractures of the tibia in its lower third. One case suppurated despite the strictest aseptic precautions, but unfortunately this patient contracted severe malaria after the operation. Nevertheless, in this case the graft grew in and the patient did well under intensive treatment with quinine.

Grafts will grow and function in cases of mildly septic fracture, but I hope to deal with their uses in this connexion in a subsequent paper. I think that from every point of view the autogenous graft is superior to the plate and screws or to the use of any other kind of foreign body. The results have been so gratifying and excellent that I shall always employ it in future for those cases that call for open operation. In all of the above cases Albee's bone-grafting instruments were used.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TORSION OF THE APPENDIX.

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TORSION of the appendix would appear to be a rather rare condition; the only previously recorded case that I have been able to find is that by Mr. J. E. Payne in the *British Journal of Surgery* for October, 1918. The following case, which came under my care in December, 1918, may therefore prove of some interest.

E. F., aged 35, was admitted to the Radcliffe Infirmary, Oxford, suffering from abdominal pain and vomiting; 60 hours before admission she was seized with severe pain in the right iliac fossa during the night and vomited almost at once. The pain increased in severity and vomiting continued at intervals. On admission her pulse was 120 and her temperature 100° F., the abdomen was slightly distended and generally rigid, this rigidity being most marked over the lower half of the right rectus, and there was acute tenderness on pressure in the right iliac fossa. I regarded the case as one of acute appendicitis with perforation, and operation was at once undertaken.

The abdomen was opened through a muscle-splitting incision, the peritoneum was injected and a little clear fluid escaped. The appendix was found hanging over the brim of the pelvis, both it and the meso-appendix were much swollen and dark purple in colour, and in places becoming black. At the base of the appendix and close to the cæcum were two complete twists, there were no adhesions, and the appendix was quite free in the peritoneal cavity. The appendix was removed and the abdomen closed without drainage, recovery being uneventful.

The appendix was 3 inches long, in a condition of acute gangrene, and contained a small concretion near the tip.

Remarks.

It is difficult to be certain of the sequence of events in this case. The torsion may have been primary and responsible for the gangrene; on the other hand, there is no particular reason why a cylindrical organ like the appendix should undergo torsion. It is much more probable that the distal end of the appendix became inflamed and swollen, and that the torsion followed later. An appendix with its distal end enlarged and swollen approaches closely the pedunculated type of organ in which torsion is common.

In view of the large number of appendix operations performed every year, and the wealth of literature on the subject, the meagre records that exist of torsion of the appendix suggest that this condition must be a rare one.

TOBACCO AMBLYOPIA IN A WOMAN.

By MONTAGUE L. HINE, M.D. LOND., F.R.C.S. ENG.

IN order to put others on their guard when examining a case of toxic amblyopia in a woman, or one in which, in default of anything more definite, a diagnosis of retrobulbar neuritis might be made, I think the following case is worth reporting.

Mrs. M., aged 51, married, in April, 1919, consulted me as she could not see anything clearly. Fifteen

months previously her sight had been affected, but after taking some medicine from her own doctor it improved somewhat. Some four months before seeing me the sight had again failed, so that she was quite unable to read. Her medical attendant could find nothing wrong with the eyes, and glasses were of no benefit. Ultimately she was sent to consult me.

Vision was reduced to 6/60 in each eye, and there was a very large central colour scotoma for red and green, and an incomplete central scotoma for blue. The fundus showed no changes save slight pallor of the optic discs. She admitted smoking cigarettes, but at first said they were "chiefly Grey's, and so forth," and it was only when she was about to leave, after I had exhausted every form of toxin I could think of, that she made the unusual admission that she was "very fond of shag cigarettes," which she got her husband to make for her, when he was smoking his pipe. Prohibition of all smoking soon accomplished a cure, though she did not revisit her medical attendant as I advised.

The smoking of "shag" cigarettes as a cause of amblyopia in a private patient is not one that would be frequently suspected, but in these days, when smoking amongst women is so much on the increase, and there are plenty of patients about whose ability to pay fees is no indication of their previous social status, it is well to bear this case in mind.

Weymouth-street, W.

A CASE OF JUVENILE TABES.

BY DAVID KERR, M.B., CH.B. EDIN.

IN the case here described I suggest that the "painful" hip must be interpreted as lightning pains, and that the three striking features of the case—(1) lightning pains, (2) primary optic atrophy, (3) absent knee-jerks—establish the diagnosis of juvenile tabes in spite of the absence of a history pointing to hereditary syphilis and of the negative Wassermann reaction of his blood and cerebro-spinal fluid.

J. E. G., a boy, aged 14 years, was admitted to the St. James's Infirmary, Balham, on May 8th, 1919, suffering from painful hip of one month's duration. The family history was not in any way noteworthy; a cousin of the patient had had some eye trouble, probably interstitial keratitis. There was no eye trouble in any other relation, and syphilis in the patient's immediate relatives was strongly denied. The pain occurred suddenly, and was of such intensity as to make him cry out; it seldom lasted more than an hour, and then suddenly ceased, leaving him placid and comfortable. He referred the pain to his back, hip, or left side, and as passing from the left flank towards the groin. Except during the actual time of the attack he was able to run about and slept well. The pain could not be localised in any joint. X ray and repeated urine examinations ruled out other possibilities.

In July failing vision was noted—diminished visual acuity, marked contraction of field, abolition of colour fields. Ophthalmoscopic examination showed a somewhat pale disc, a slight total excavation, indications of lamina cribrosa not evident; there was a well-marked chorioidal pigment ring. Vision steadily deteriorated, and soon complete blindness ensued.

On Nov. 8th an attack of vomiting occurred. He wasted a little in the first three months; later his nutrition was well sustained. On only two occasions did he complain of headache. Knee-jerks absent. No paralysis. No impairment of sensation. The boy is bright and intelligent.

The vomiting may have been a gastric crisis; no other cause could be found.

I am indebted to Dr. W. L. Maccormac, medical superintendent of the St. James's Infirmary, for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

REMOTE EFFECTS OF THE SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.

A MEETING of this section of the Royal Society of Medicine was held on March 3rd, Sir JOHN BLAND-SUTTON, the President, being in the chair.

Mr. H. J. PATERSON read a paper on the Remote Effects of the Surgical Treatment of Gastric and Duodenal Ulcers. He considered these results from three points of view: (1) clinical, or the result of the operation as regards the patient; (2) physiological, or the result of the operation as regards the secretions of the stomach and the metabolism of the body; (3) pathological, or the influence of operation on the healing of the ulcer and the complications which might ensue from surgical treatment.

1. *Clinical.*—The conclusions were based on his first 450 cases, all performed over seven years ago. An analysis of this series gave the following results: 51 of the patients had died of other diseases, having lived for more than two years after the operation without any recurrence of their gastric disorder, and 270 were alive and quite well. The number of those who were dead might seem large, he said, but the series dated from 20 years ago, and one patient operated on in 1901 was now 81 years of age. Adding these two classes together gave a percentage of 80 per cent. who might be regarded as cured by the operation. In 9 per cent. the result might be classified as fairly good, the patients being relieved of their pain, but either suffering from occasional attacks of indigestion or having to exercise care in their diet. In 7 per cent. of the cases the operation might be classified as bad, in 4 cases a jejunal ulcer occurred, in 1 there was a recurrence of a duodenal ulcer, and 23 cases were complete failures, probably due in some cases to leaving in the abdomen a diseased appendix in the days before the rôle of the appendix in producing gastric symptoms was appreciated. There must be a definite pathological indication for the operation, and some of the failures were due to disregard of this vital rule. An operation performed on a clinical diagnosis unconfirmed by pathological findings was a mistake both in diagnosis and in operation.

2. *Physiological.*—A study of the physiological effects of gastro-jejunostomy was important, as it showed how gastro-jejunostomy acted and taught the proper indications for its use. There were two striking and constant effects of gastro-jejunostomy on the stomach contents: (1) the diminution of the total acidity; and (2) the increase of mineral chlorides. Tables of gastric analyses were shown illustrating this and showing the amount of free hydrochloric acid and mineral chlorides before and after the operation. The diminution of the total acidity was due partly to the diminution of the total chlorides secreted by the gastric mucosa and partly to the neutralisation of free hydrochloric acid by the small quantity of bile and pancreatic juice which flowed back into the stomach through the anastomosis. The increase of mineral chlorides was constant and permanent. It was not the result of increased activity of the gastric mucous membrane, and must therefore be due to chlorides added from without. The inference, therefore, was irresistible that the increase was due to the mineral chlorides of the bile and pancreatic juice which gained entrance to the stomach through the anastomosis. This was borne out by the fact that if the gastro-jejunostomy were undone there was a decrease towards the normal after restoration of the alimentary canal to its normal condition. Tables of analyses were also shown to illustrate this. Other tables showed that when an entero-anastomosis had been performed in addition to the gastro-jejunostomy, and the bile and pancreatic juice diverted through this opening, no increase of mineral chlorides was present. The difference in the average increase of mineral

chlorides after the different types of gastro-jejunostomy was so small as to be negligible, so that physiologically the type of operation performed was unimportant, with the exception that all types of Y operations and gastro-jejunostomy with entero-anastomosis were unsound. The conclusion to be drawn was that gastro-jejunostomy was not a mechanical but a physiological operation, and its action was to enable nature to counteract hyperacidity and neutralise the effects of hypersecretion. With regard to the effect of the operation on metabolism, a series of experiments showed that the operation did not appreciably diminish the proportion of nitrogen or fat absorbed from the food. We were, therefore, justified in concluding, by both clinical and pathological evidence, that the operation of gastro-jejunostomy did not appreciably interfere with the metabolism of the human body, and was compatible with the enjoyment of perfect health.

3. *Pathological.*—Post-mortem examination in five instances, made four or five years after an anterior gastro-jejunostomy with a long loop, showed that the anterior surface of the stomach had been drawn downwards and posteriorly, while the afferent limb appeared to become shortened, measuring 4 to 5 inches instead of 10 to 12 inches. Post-mortem examination on 16 occasions showed that in all of the cases the ulcer, whether gastric or duodenal, had healed and the anastomotic opening had diminished from 2¼ to 2½ inches to 1¾ to 2 inches in length.

Jejunal Ulcer.

Jejunal ulcer was, perhaps, the most serious after-complication of gastro-jejunostomy. For ulcers situated around the site of the anastomosis he suggested the description "gastro-jejunal ulcers," for those situated in the jejunum he would retain the name "jejunal ulcers." From the records available he thought that we were justified in assuming that the proportion of cases in which jejunal or gastro-jejunal ulcers followed gastro-jejunostomy was between 1 and 2 per cent. There were strong grounds for believing that jejunal ulcer was the result of the toxic action of free hydrochloric acid on the jejunal mucous membrane, the hydrochloric acid so injuring or killing the cells of the jejunal mucous membrane that they were readily digested by the intestinal juice. Jejunal ulcer was usually associated with hyperacidity of the gastric contents, and in the majority of instances the ulcer was situated either opposite the anastomosis or just below it in the efferent limb—that is, just where the acidity of the gastric contents, when they reached the jejunum, was greatest. Usually, after gastro-jejunostomy, the small amount of bile and pancreatic juice which flowed back into the stomach was sufficient to neutralise or reduce to normal the free hydrochloric acid present in the gastric contents; but, if the amount of free hydrochloric acid in the gastric contents was excessive, the bile and pancreatic juice might not neutralise the free hydrochloric acid sufficiently to prevent its toxic action on the jejunal mucous membrane, when it came into contact with it. From observations which he had made on a patient in whom a jejunal ulcer had perforated through the abdominal wall, it was seen that the gastric contents showed a high degree of acidity, which was not neutralised by the bile and pancreatic juice, as was shown by analysis of the fluid escaping from the fistula. After a week on a purely milk diet, the free hydrochloric acid in the gastric contents was reduced to about normal, so that the fluid flowing from the fistula contained only 0·004 per cent. As its percentage in the gastric contents diminished rapidly on a milk diet, the excess was probably due to errors in diet. Jejunal ulcer was sometimes attributed to damage to the intestine, caused by the use of clamps. There were two objections to this hypothesis: (1) the interval between the operation and the onset of symptoms of jejunal ulcer varied in his cases between two and five years; (2) the ulcer usually occurred in a situation not gripped by the clamps. In a few cases jejunal ulcers were probably infective in origin. In such cases the ulcer occurred within a very short period after the gastro-jejunostomy, and the ulcers were usually multiple.

The conditions under which jejunal ulcers might arise might be summed up as follows: 1. Hyperacidity of the gastric contents, so that the bile and pancreatic juice were unable to neutralise completely all the acid entering the jejunum. 2. Normal percentage of hydrochloric acid in the gastric juice, but excessive secretion, so that the amount of hydrochloric acid discharged into the jejunum was greater than could be neutralised, and there was a continual action on the jejunal mucous membrane of a weak solution. 3. Diversion of the course of the bile and pancreatic juice, so that part of the jejunum was exposed to the action of the gastric contents unmixed with bile and pancreatic juice, as after operations of the Y type, and gastro-enterostomy with entero-anastomosis. 4. Normal acidity and amount of gastric secretion, but incomplete neutralisation in the jejunum owing to temporary diminution of the flow of bile and of the secretion of pancreatic juice.

Dr. Charles Bolton, in a series of experiments, found that feeding guinea-pigs on a solution of hydrochloric acid up to 0·7 per cent. produced no effect whatever, but a solution above that strength produced gastric lesions identical in character with those produced by a gastrotoxic action. He concluded that the gastric juice was not only concerned in the initiation of a gastric ulcer, but also in its tendency to spread and to become chronic; and that the gastric juice owed its destructive power primarily to the hydrochloric acid contained in it, and the damage done to the wall of the stomach varied in proportion to the strength of the acid present. These conclusions, Mr. Paterson thought, might be applied with even greater force to the action of hydrochloric acid on the jejunal mucous membrane, which, under normal conditions, was unused to the presence of the acid gastric contents.

Gastro-jejunal Ulcer.

Much of what had been said applied, he continued, to this variety of ulcer. Hyperacidity was an important factor in both, with this difference that jejunal ulcers were the result of altered physiological conditions produced by the operation, whilst gastro-jejunal ulcers were probably a direct consequence of operation. If the mucous membrane were roughly handled or injured, or unduly constricted by too tight a suture, or if coaptation of the gastric and jejunal mucous membranes were imperfect, ulceration would follow at the line of the suture. If hyperacidity or hypersecretion existed, then the ulcer, instead of healing, might persist or spread, and eventually give rise to symptoms, and might lead to great constriction or even closure of the anastomotic opening. That the use of a non-absorbable suture was a cause of gastro-jejunal ulcer he regarded as non-proven.

If his views were correct the practical point arose as to what were the causes of hyperacidity after gastro-jejunostomy. We must draw a clear distinction between two classes of cases: (1) those in which hyperacidity was present before and persisted after the operation, and (2) those in which, after a period of normal or subnormal acidity following operation, the gastric contents subsequently became hyperacid. Hyperacidity persisted after the operation for one of two reasons: (*a*) extreme hyperacidity before operation, so that the bile and pancreatic juices were unable to reduce the acidity of the gastric contents to normal unless the patient was kept on a milk diet for some months; or (*b*) an opening which was too small or inefficient. If the opening were too small hypersecretion might persist, and any kink or twist at the site of the anastomosis would prolong the contact of the gastric contents with the jejunal mucosa. Hyperacidity of the gastric contents succeeding a period of normal or subnormal acidity was probably due to too small an opening or to indiscretions in diet. Operation was only an incident in the treatment of gastric and duodenal ulcers, and too much emphasis could not be laid on the importance of a carefully regulated diet after operation. In most cases indiscretions in diet played the chief part in causing post-operative hyperacidity, and so predisposing to the occurrence of gastro-jejunal and jejunal ulcers. A prolonged period of restricted diet was imperative, especially in cases in which there was

hyperacidity before operation. In all cases of hyperacidity increase in diet should be controlled by gastric analyses at regular intervals. Every case of recrudescent pain of a constant character after gastro-jejunostomy, especially when associated with hypersecretion, should be regarded as a case of potential ulcer and treated accordingly.

The Effect of Gastro-jejunostomy on Ulcers of the Lesser Curvature.

In the course of the discussion which followed,

Mr. GARNETT WRIGHT spoke of the effects of gastro-jejunostomy on lesser curvature ulcers and of secondary ulceration. Though in a number of cases this operation would effect a cure, yet there were many patients in whom temporary relief was followed by a disappointing return of symptoms, and subsequent operation showed the presence of an unhealed ulcer. He now adopted one or other method of excision: either wedge-shaped excision and gastro-enterostomy or partial gastrectomy, the last method being the one he preferred. It had the advantage of removing the ulcer-bearing area, as was pointed out by Rodman in 1904. The largest statistics (Mayo Clinic) gave the mortality as 7 per cent. The operation which he did at present was the anterior Polya operation.

Secondary ulceration was the most important of the harmful remote sequelæ of the operation of gastro-jejunostomy. It was almost impossible to get the data for a reliable estimate of its frequency. In its slighter manifestations it was a much commoner condition than was usually suspected, and in many patients in whom a recurrence of the original ulceration was suspected the real lesion was a new ulceration in the anastomosis or in the jejunum. In considering the causation of such secondary ulceration three factors must be taken into account: (1) the digestive action of the gastric juice; (2) sepsis; (3) trauma. A combination of two or more of these factors was necessary to the production of secondary ulceration.

(1) The influence of gastric digestion was shown in the distribution of the ulcers in a position subject to the action of the non-neutralised gastric juice and in the greater liability to ulceration in operations complicated by some form of entero-anastomosis. There was a steadily diminishing power of resistance to gastric digestion as one descended the small intestine. No secondary ulcers had been reported after gastro-duodenostomy, and more occurred after anterior than after posterior gastro-jejunostomy.

(2) Sepsis. Excluding the gross sepsis which might possibly be introduced at the time of operation, there was a potent source of infection in the presence of an unhealed gastric or duodenal ulcer. Streptococci were constantly present in such ulcers, and streptococci had been recovered in large numbers from gastric and duodenal ulcers from patients on whom he had operated, very few colonies being recovered from the rest of the mucosa. An anastomosis established with an unhealed ulcer in existence in the stomach or duodenum was exposed to the risk of infection from the ulcer, and he thought that a certain number of secondary ulcerations, especially of the gastro-jejunal type, could be explained in this way.

(3) Trauma was often an accessory agent in the production of secondary ulceration, and this might be due to the technique of the preliminary operation. In 14 out of 155 cases Murphy's button or some form of bobbin had been used. In 13 a continuous non-absorbable suture was considered to be the exciting cause of the ulceration, but cases had occurred when only absorbable suture material had been used. The bruising of the bowel or stomach produced by the use of heavy clamps had been blamed, and Hartman considered this a very important factor. The more recent cases seemed to be of the gastro-jejunal type, and he wondered whether the through-and-through hæmostatic stitch did not lead to a stoma in the mucosa in which the mucosa was adherent in a thin line all round. Such a stoma would be more liable to injury by pieces of food than one where the mucosa was freely movable over the deeper parts. But the cause of the original ulceration was still probably active, and where this was so patients would develop fresh ulcers in spite of all efforts.

Morbid anatomy of secondary ulceration.—With regard to this he said that the number of cases of jejunal ulceration slightly exceeded the gastro-jejunal variety: out of 142 cases, gastro-jejunal occurred in 63, jejunal in 79. Of the jejunal, in 54 the ulcer was on the efferent loop, in 2 on the afferent loop, and in 10 opposite the stoma—i.e., on the mesenteric border of the jejunum. In 9 cases the ulcers were multiple and in 4 the site was not definitely stated. Acute perforation into the peritoneal cavity took place in 31 cases, and was more liable to happen after anterior gastro-enterostomy (28 per cent. of the cases as against 15 per cent.). Chronic perforation into the abdominal wall was often seen after anterior gastro-enterostomy, large inflammatory tumours and sometimes external fistulæ being produced. After the posterior operation chronic perforation into the mesentery was frequent, the mesentery of the colon becoming thickened and contracted, until finally the colon was brought into contact with the ulcer, perforation into the colon and jejunocolic fistula resulting. Fistula into the colon was almost invariably secondary to a posterior gastro-enterostomy. It occurred in 21 out of 142 cases which he collected, and in only two instances was the preliminary operation an anterior one, and in one of those it was of the retro-colic variety. In the case of ulcers opposite the stoma—i.e., in the mesenteric border of the jejunum—the contraction of the ulcer tended to produce a spur at the gastro-enterostomy opening and consequent obstruction. Heavy clamps might cause such ulcers, as they were situated where the pressure of clamps was likely to be exerted.

Specimens to Show Successful Results of Operation.

Mr. JAMES SHERREN said that if the appropriate procedure was adopted the ulcer healed permanently, and any symptoms which might arise later were the outcome of ulcerative or mechanical changes associated with the anastomosis. Chronic ulcers of the stomach and duodenum healed as the result of gastro-jejunostomy correctly performed unless chronic perforation had occurred, the floor of the ulcer being formed of liver or pancreas, thus preventing the contraction necessary to sound healing. In his experience recurrence of a simple ulcer after suitable surgical treatment was unknown. He had not seen it at post-mortem examinations nor at second operations carried out for other conditions. The only instance in which he had seen the ulcer unhealed had been at second operations for posterior eroding ulcer treated by gastro-jejunostomy alone, and these he now invariably dealt with by partial gastrectomy. A specimen was exhibited showing healing of a chronic duodenal ulcer more than 11 years after gastro-jejunostomy, the patient having died of primary carcinoma of the liver as seen on post-mortem examination. Two other specimens showed the ulcers healed 8 and 3 years after operation.

He believed that the action of the gastro-jejunostomy was twofold—it reduced gastric acidity and led to a more rapid emptying of the stomach. Its good effects were not solely or mainly mechanical. Malignant disease of the stomach might occur at remote periods after treatment of chronic gastric ulcer by gastro-jejunostomy alone. It was the probable cause of death in three of his series at 7, 5, and 4 years after operation. As no post-mortem examination was possible he was unable to say if it arose at the seat of the simple ulcer. They were all cases which he would now treat by partial gastrectomy. In 3 per cent. of chronic ulcers of the stomach which he had removed at operation, the naked-eye diagnosis being simple and there being no evidence or suspicion of malignancy, carcinoma starting at one edge was discovered on microscopic examination. He knew of no case of carcinoma of duodenum arising after operation for chronic duodenal ulcer, but in 2 cases in which the ulcer was involving the stomach further operation became necessary within 18 months, and revealed carcinoma of the stomach, the duodenal ulcer being healed.

Post-operative vomiting of the regurgitant type was due to errors of judgment or technique. In all his cases except the first some abnormality was present at the first operation and some definite mechanical change was found at the second. Gastro-jejunal or anastomosis

ulceration was due to the use of unabsorbable suture material for the inner or outer layer, and was the only cause of stricture. He believed that an anastomosis ulcer might become malignant. Jejunal ulcer was due to failure of the operation sufficiently to lower gastric acidity at the same time that it failed to remove the cause of the original ulcer or damaged the jejunum. It was almost unknown after gastro-jejunostomy for chronic gastric ulcer. In all cases of true jejunal ulcer gastric acidity was higher than it should be when compared with the pre-operative, unless the ulcer was communicating with the colon, when a low acidity was the rule. The use of the jejunal clamp was one of the causes of jejunal ulcer, but this of itself would not be enough unless the acidity remained high. He had noted bruising by clamp in 6 cases in which he had records of test meals both before and after operation. In 3 gastric acidity remained high and ulcer developed in all; in the others the acidity was markedly lowered, and there had been no symptoms pointing to ulceration. The operation had been performed over two years previously.

Two specimens were exhibited bearing on the question of jejunal ulcer. One showed the result at a late period after operation. A jejunal ulcer developed as a purely local complication and was excised. The gastro-jejunostomy opening and the jejunum were normal. The other showed a sequel which he had found in over a third of the cases of true jejunal ulcer—perforation into the colon. The ulcer, which had perforated into the colon, was seen free of the anastomosis, which was healthy and showed no sign of scarring. Out of 389 cases of chronic duodenal ulcer which he had operated upon over a period of two years he had been able to keep 348 under observation. Of these, 318 had remained quite well, and might be claimed as successes. This was over 90 per cent. of those traced, or 80 per cent. of those operated on. He had had to re-operate on 19 for secondary ulceration, 10 being jejunal. Of the remainder, all except one, who had, he thought, an anastomosis ulcer, expressed themselves as better for the operation. Of 310 cases of chronic gastric ulcer operated on during the same period, over 80 per cent. of those kept under observation were successful, or 75 per cent. of those operated upon; 14 had second operations, 5 for recurrence after excision alone, 5 for excision of posterior adherent ulcers that had not completely healed after gastro-jejunostomy alone. All these became successes, but were not included. Four were operated on for secondary ulcers, only 1 of which was jejunal. In the remainder complaints were few, and all expressed themselves as better for the operation. The remote result in the treatment of chronic gastric ulcer improved as individual experience ripened.

Failures Due to Injudicious Selection of Cases.

Dr. ROBERT HUTCHISON said that he was a whole-hearted believer in the surgical treatment of chronic gastric and duodenal ulcer, but one must not expect too much. He would not himself regard the operation as even comparatively unsuccessful merely because the patient had occasional indigestion afterwards. It must be remembered that gastro-enterostomy did not make a patient immune to functional indigestion or to attacks of gastritis. He had seen, of course, a good many failures, and a disproportionate number of these seemed to come from certain districts. The bad results were perhaps more often due to injudicious selection of cases than to errors of technique, so perhaps the physicians were to blame for them more than the surgeons. Apart from gross mistakes in diagnosis, and the overlooking of other pathological conditions in the abdomen such as chronic appendicitis or gall-stones, it seemed as if the co-existence of gastroptosis or marked gastric atony militated against a very successful result. In gastroptosis this might be due to the greater curvature sagging down, so that the anastomosis came to be too high up, or a pouch formed behind it in which stagnation of contents took place. He had never seen recurrence of a duodenal ulcer after the operation, and in recent years anastomosis ulcer seemed to be commoner than jejunal ulcer. He accepted Mr. Paterson's explanation of the production of the latter as being due to a continued hyperacidity of the gastric contents, but could not agree that this was the result of errors of diet. In so far as it was not due to the anastomosis opening being too small, it was to be regarded, he thought, as a functional disorder of the stomach, the result of nervous disturbance. In order to prevent its occurrence the state of the patient's nervous system had to be considered, and at the same time alkalies should be given in all cases in which the gastric acidity was excessive. He preferred to use the earthy carbonates for this purpose rather than bicarbonate of soda. He would like to have an expression of surgical opinion as to the relative advantages and disadvantages of occluding the pylorus at the time of the operation and its effect, if any, in preventing or promoting remote ill-effects.

Diagnosis.

Dr. C. BOLTON said that since 1919, when he had reported on 27 cases of jejuno-colic fistula, he had had during the past four years 4 other cases. Of these 3 had recovered after operation by Mr. Wilfred Trotter, and in the other case the fistula had been found post mortem. All the 31 cases had occurred in the male sex, usually from 30 to 50 years of age. The time after the performance of the gastro-jejunostomy at which the fistula had appeared varied from a few weeks to 10 years. He spoke principally about the diagnosis, first considering the exact conditions present. The cause of the fistula was the perforation of a gastro-jejunal or a jejunal ulcer into the transverse colon, such an ulcer resulting from the operation of gastro-jejunostomy. The position of the fistula depended upon the position of the ulcer. Usually the colon communicated indirectly with the stomach through the jejunum. The fistulous opening was situated within an inch of the stoma and to the left, the colon lying in front. Occasionally the colon communicated directly with the stomach if the ulcer was of the gastro-jejunal type. It might also communicate both ways. If the colon communicated directly with the stomach the case was of no great medical interest, because the diagnosis was clear from the typical clinical spectacle of fæcal vomiting and eructations of foul gas, passage of undigested food in the motions, and wasting. If, however, the communication was indirect the condition was of great medical interest, for the diagnosis might be extremely difficult. As the stomach emptied, food passed down the efferent limb of the jejunum, only a small amount or none passing into the transverse colon. Leakage from the colon to the jejunum was more marked and more constant, as the colon continually contained liquid fæces, diarrhœa being a constant feature. The amount leaking into the jejunum depended upon the liquidity of the contents of the colon, the patient being much relieved when he was constipated. Besides, the fæces leaking into the jejunum passed more easily down into the small intestine than back into the stomach. The small intestine thus became infected, and this condition kept up the diarrhœa.

The diagnosis turned on the finding of fæcal material in the stomach contents. Vomiting might be only occasional and fæcal material was not constantly in the stomach, so that the physician might never obtain a view of the fæcal vomit. Vomiting might be absent and fæcal material only obtained by tubage of the stomach. Similarly diarrhœa, which was the earliest and most constant symptom, was liable to mislead the physician. The stools were loose, brownish-white in colour, and not very watery. There was no separate blood nor mucus. They did not occur particularly after a meal, but at any time during the day or night, when they were liable to keep the patient awake. The frequency varied from 3 or 4 to 12 in the day. There was commonly no undigested food present. Ferments were usually absent and the total fat was about normal. There were usually intervals when the motions were formed; the vomiting then stopped and the patient felt much better. Eructations of foul gas were present, but the patient usually brought up no more than occurred in simple indigestion. Intestinal pain was present and referable to both small and large intestines, but was particularly liable to be marked on the right side, where it was of a griping character. When this

pain was associated with visible peristalsis a mistaken diagnosis of intestinal obstruction might be made, but the patient was always better when he was constipated and worse when suffering from diarrhœa. The peristalsis was due to narrowing of the colon in the region of the fistula. Wasting was constantly present. The appetite was not necessarily affected, and might be good or even excessive. X ray examination might show an opaque meal passing from the stomach into the colon, or the stomach might be seen to fill from the colon after an opaque enema. Other methods in use were the finding of easily recognisable substances in the fæces shortly after ingestion, the recovery of a coloured enema by tubage of the stomach, and the passage of air into the stomach after insufflation of the rectum or vice versa. The immediate prognosis after operation on these fistulæ was good. Of the 31 cases, 4 had had no operation, and all died—1 from perforation of the ulcer, another from hæmorrhage, and the other 2 from inanition. Twenty-seven were operated upon, and of these 21 recovered. Of the 6 deaths, 2 followed simple exploration of the abdomen, the fistula not being touched.

The Results of Short-circuiting.

Sir D'ARCY POWER thought that short-circuiting for dilated stomach, the result of duodenal ulceration, was rarely followed by any untoward results. He described a case in which the patient had suffered from numerous attacks of abdominal pain. In 1903 he had lost 2 st. in weight, and presented the typical symptoms of pyloric obstruction. A posterior gastro-enterostomy was performed. He regained his normal weight, was able to resume full work, and was able to eat a City dinner without subsequent discomfort. He died in 1913 at the age of 58 from acute retention of urine due to an enlarged prostate. Post-mortem examination showed the stomach to be dilated and slightly hypertrophied. The opening between the stomach and jejunum was large and patent, and the mucous membrane of the stomach and small intestine appeared healthy. Microscopic examination of a section taken at the point of suture showed a sharp line of demarcation between the mucosa of the stomach and intestine. The results shown in the specimen were, he thought, those which followed normally in similar cases. The opening remains of the size it was made, the stomach does not entirely recover its normal size, but the patient is able to resume an active life. From time to time he becomes constipated, or he eats what he knows will give him indigestion. He then suffers from abdominal discomfort, becomes depressed, and believes that his former condition is returning. Gentian and rhubarb and a little advice as to dietetics soon cure him. It might be quite otherwise when gastro-enterostomy had been done for an actively bleeding duodenal ulcer. In many cases the patient is relieved by the operation, but he had had two or three in which the bleeding recurred, and in one case the hæmorrhage was so repeated and severe that the patient died some months after he had operated upon him. In cancer of the stomach and pylorus the operation was palliative, and—in hospital cases at any rate—did not appear to prolong life, though the pain and sickness were relieved. He did not advocate it, therefore, except when these symptoms were prominent, although it was surprising how well the operation was borne, even by patients who were greatly emaciated. So far as he knew, none of his patients had suffered from symptoms of "peptic ulcer," and for this he could assign no reason. He operated rather quickly, did not use intestinal clamps, sutured with No. 2 silk, and had shortened the jejunal loop from 9 inches in 1903 to 3 inches in 1920; otherwise his technique remained unchanged.

Mr. R. H. JOCELYN SWAN wished to draw attention to the fact that there should be no pathological results from a gastro-enterostomy if performed for a definite mechanical lesion such as pyloric stenosis or prepyloric ulcer. He used very fine thread for all three layers, and after the anastomosis hitched up the distal 1½ inches of the jejunum to the transverse mesocolon in order to avoid any kinking of the new junction. He showed a specimen of carcinoma of the whole pyloric end of the stomach, which was commencing to involve the gastro-enterostomy opening made nine years previously for a cicatricial pyloric stenosis from old ulceration. Apart from this case, and one in which he had had to reopen in order to secure a spurting vessel at the jejunal side of the anastomosis, he had seen no case of jejunal ulcer follow a large number of anastomoses, and in several cases in which it had been necessary to reopen the abdomen subsequently for other conditions the opening had been fully patent.

Difficulties of Operation and Failures in Technique.

Mr. A. J. WALTON'S remarks were based almost entirely on his own personal experience. The total number of operations was 335, of which 321 were personally treated from the beginning. Of these 321 cases 10 required further operations, 3 for the onset of carcinoma, 3 for recurrent ulcers, and 4 for gastro-jejunal ulcers; in other words, 3·2 per cent. required further operative treatment. Few cases had been lost sight of, so that it was probable that this percentage was fairly correct. The remaining 14 cases had had their first operation performed by some other surgeon, and therefore it was impossible to estimate what percentage of recurrence they represented. The after-history showed that about 80 per cent. were complete recoveries.

The post-operative difficulties might be classified as follows:—

(*a*) The operation is unjustifiably performed. Gastro-enterostomy was sometimes performed without any clear evidence of the presence of gastric or duodenal disease; he wished especially to lay stress upon visceroptosis. Symptoms of this condition might simulate those of a gastric ulcer closely, and at operation local areas of spasm might be seen which appeared to be mistaken for chronic ulcers. Gastro-enterostomy would not only give no relief, but would often be followed by an aggravation of the symptoms. The one exception to this statement was an acute ulcer giving rise to severe hæmorrhage, which might be found with visceroptosis in young women. Under such circumstances a gastro-enterostomy might be of great value, but in his experience only when combined with pyloric occlusion.

(*b*) Gross lack of anatomical knowledge at the first operation. This he had found on three occasions. In two cases a junction had been made with the colon instead of with the jejunum; in the third case an anastomosis had been performed with the ileum 12 inches from the ileocæcal valve. In all three cases the opening had been so badly made that it was too small to function, and the patients might be said to have survived because there were two errors instead of one. Their symptoms were simply those of persistence of the ulcer.

(*c*) Some obstruction of the afferent and efferent loops, a condition now but rarely seen. Four different varieties of the obstruction might be recognised:—

(1) Too long a loop. With a long afferent loop there would be a tendency for the intestine to drag upon the stomach at the junction, so that the afferent and efferent loops became parallel, and a sharp bend with kinking was formed. This was especially likely to happen with an anterior gastro-enterostomy if the ante-colic method were used. Sherren's retro-colic method would overcome this when it was necessary to perform any anterior gastro-enterostomy. (2) Too short a junction. If too small an opening were made the attachment would become so narrow that a kink would occur somewhat similar to that in the last group of cases, the afferent and efferent loops becoming approximated so that the passage would not be clear. (3) Constriction by the opening of the mesocolon. It had always been advocated that the mesocolon be sutured to the junction, in the belief that if this step were not carried out a hernia of the small intestine might take place through the opening. This complication was a rare one, but if the suturing were not performed there was a much more common complication; the ring of the mesocolon would slip downwards and would approximate the afferent and efferent loops so that they would come to lie parallel and would thus be kinked. In fat patients, even if the mesocolon be sutured to the junction, the lower leaf of the meso-

colon might constrict and, owing to the thickness of this structure, the constriction might lie well below the junction and thus approximate the loops. Mayo advocated that in stout patients the mesocolon should be sutured to the posterior wall of the stomach some distance from the junction. (4) Axial rotation. If the jejunum were rotated upon its long axis, while the junction was being made, symptoms of obstruction would develop almost at once.

(*d*) The opening badly planned. It was well realised that such devices as Murphy's button were often left in situ; that they left too narrow an opening; that they often caused hæmorrhage; that they were followed by ulceration and constriction; and that their insertion could not be carried out more quickly than the safe method of an anastomosis by suturing. The faults which were more likely to be found to-day in the formation of the opening were: (1) The opening too small. To allow for constriction in the healing the opening should be at least 3 to 3½ inches long when the intestine was held between the clamps—that is to say, its circumference should be 6 to 7 inches. (2) The opening too high. However the opening be placed, whether it be vertical, retro-peristaltic, or iso-peristaltic, the lower portion of the opening should reach nearly to the greater curvature. (3) The posterior wall united to the anterior wall. He had always been struck with the ease with which it would be possible to pick up the posterior wall in suturing the two anterior layers and had always taken care to avoid this pitfall. He had seen the condition in one case in which the symptoms returned 18 months after an operation by another surgeon. (4) The opening wrongly placed in regard to the constriction. The commonest fault was that an hour-glass stomach was overlooked when associated with pyloric obstruction, and a junction was made between the jejunum and the distal pouch, thus failing to overcome the obstruction in the middle of the stomach. The reverse of this might sometimes happen with a double constriction, an opening being made into the proximal pouch alone.

(*e*) Gastro-jejunal and jejunal ulcers arise. (1) Gastro-jejunal ulcer. His own experience supported the view that this form of ulceration was due to the presence of a piece of silk suture. In the three cases of his series in which this occurred he had used silk sutures for the outer layer and had been able to find the suture at the second operation. A similar suture had been found in three out of the four cases where the operation had been performed by other surgeons. Since he had been wholly using catgut he had not had an example of the condition. That the increase of acid was also a factor was shown by the fact that in all of his cases the original operation was for a pyloric ulcer, in which condition the free hydrochloric acid was much higher than with a lesser curve ulcer. The ulcers all commenced either anteriorly or at one extremity and they tended to become adherent and to perforate into the colon. He thought that their method of production was as follows: As the first layer of through-and-through catgut suture was approaching its termination the mucosa was hidden from view and slipped out of sight so that the through-and-through suture picked up only the muscular and peritoneal coats. When the silk embedding suture passed over this surface it would not be covered by mucosa and a raw surface would be left, in the base of which was an unabsorbable foreign material, and under the influence of excess of acid this gave rise to a chronic ulcer. Such an ulcer might be prevented by taking special care to include the last piece of mucosa in the through-and-through suture and to use a catgut suture for the embedding layer. (2) Jejunal ulcer. In his own series he had not yet met with a true jejunal ulcer, and many of the specimens he had seen described as jejunal ulcers were continuous with the gastro-jejunal junction. He thought, therefore, that the majority of these ulcers had always spread from the gastro-jejunal junction. A true jejunal ulcer appeared to be very rare and it was doubtful if it occurred when the anastomosis were performed correctly. It would also seem doubtful if an ulcer could be caused by the trauma due to the use of clamps, for acute ulcers of the stomach tended to heal rapidly, and one would assume that such a lesion in the surface of the jejunum would also heal if no foreign material were present.

(*f*) Hernia through the mesocolon. It was to prevent this complication that advice was always given that the mesocolon be sutured to the junction. He thought that this method of suturing was of more value in preventing slipping of the mesocolon than in preventing such a hernia.

Complications at Present Unexplained.

(*a*) Recurrence of the ulcer. Two groups of this complication might be recognised: (1) Due to faults as described above. In one of his cases in which symptoms recurred five months after excision of an ulcer on the lesser curve, and gastro-enterostomy had not been performed, a posterior ulcer was found at the lower part of the resection, and in the base of the ulcer a piece of silk was found, the recurrence in this case being due to causes similar to those producing a gastro-jejunal ulcer. If a perforated gastric ulcer was sutured, and no gastro-enterostomy were performed, the ulcer was likely to persist or recur. Two such cases occurred in his series. (2) Occasionally, when the technique seemed good, an ulcer might recur. The explanation was difficult to see, but it was possible that the ulcers were present at the first operation and were overlooked, and that they were not cured by a simple gastro-enterostomy.

(*b*) Persistence of the ulcer. An ulcer high up on the lesser curve would probably not be entirely cured by a posterior gastro-enterostomy, and it would be necessary either to excise the ulcer or to perform a partial gastrectomy. If the ulcer were too large or too adherent for this to be attempted the pylorus should be occluded and a gastro-enterostomy performed.

(*c*) Onset of carcinoma. In his experience the percentage of cases in which this happened was very low. It was possible that where carcinoma had apparently supervened after operation it might have been present in the original ulcer. On several occasions when he had performed a partial gastrectomy, on microscopical section a small patch of carcinoma had been seen.

Apart from the complications mentioned, which his figures showed to have been relatively rare, his experience had been that these patients progressed very favourably. He now saw all cases in a "follow through" department, and since it had been started had lost sight of less than 1 per cent. of them. About 80 per cent. of patients with gastric or duodenal ulcers were completely cured of their symptoms. Of the remainder, 3·2 per cent. had one of the lesions described above, which required operative treatment, while the rest showed but ill-defined attacks of dyspepsia, which were easily controlled by short courses of medical treatment.

A Scientific Operation.

Mr. C. RYALL said that the operation of gastro-enterostomy was founded on sound scientific lines and was as free from immediate risks as any simple abdominal operation; disappointing results were, in carefully selected cases, as rare as in other abdominal operations. That gastro-enterostomy cured duodenal and pyloric ulcers, and did so rapidly, was beyond argument. He had seen large inflammatory masses surrounding ulceration disappear, as well as the ulcer, in the course of two or three weeks. Gastro-enterostomy cured ulcers at the pyloric end of the stomach, but he was inclined to excision as well as short circuiting in ulcers away from the pylorus. He wondered whether the fact that some surgeons met with gastro-jejunal ulcers more frequently than others was due to a difference in their technique. Did the ulceration occur more frequently where the opening was small or did it follow any particular method of suturing? Union took place so rapidly, no matter how the suturing was applied, that surgeons naturally fell back on the quickest method of application. He did not favour bunching together all the coats of the stomach, as it did not tend to accuracy of apposition of the mucous membrane, but he considered that better results might

be obtained by three layer sutures, a separate one thus being used for the accurate apposition of the mucous membrane. As to the use of thread, he agreed with Mr. Paterson that as a cause of gastro-jejunal ulceration it was unproven, though he himself used catgut for suturing the mucous membrane. He thought that simple ulcers of the stomach and its outlet were due to hyperacidity, and that this was cured and the ulcer healed as a result of short-circuiting; nevertheless, there was no reason why fresh ulceration should not occur, either in the stomach or its new outlet, should hyperacidity recur and remain unchecked.

Dr. A. F. HURST and Mr. G. GREY TURNER also contributed to the discussion.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

ACCESSORY FOOD FACTORS IN INFANT FEEDING.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 27th, Mr. J. P. LOCKHART-MUMMERY, the President, being in the chair, when a discussion took place on the Influence of the Accessory Food Factors in Infant Feeding.

Dr. E. MELLANBY, who opened the discussion, touched on some of the more pressing problems concerned with the value of the antiscorbutic factor in infant feeding. It was desirable that authoritative statements should be made on the relative susceptibility of infants to this factor—whether, for instance, there were evidences of ill-health short of scurvy produced by a relative deficiency in the diet. Such symptoms might be widespread, although scurvy itself was uncommon. A point that might also be settled at the discussion was the necessity or otherwise of adding orange or swede juice to diets composed entirely of dried whole milk.

The Antirachitic Factor in Infants.

The rest of his remarks dealt with the part played by the antirachitic factor in infants. He briefly sketched the more recent results of animal experiments on rickets. The following points were discussed:—

(1) The importance of the antirachitic factor in respect to the age of the animal. The younger the animal the more important was a requisite amount of antirachitic accessory factor in the diet. After a certain age it had been impossible to produce rickets in puppies by reducing the antirachitic factor in the diet. Also cases of self cure of rickets in puppies occurred when the diet and other conditions remained constant. These facts showed that the vitamine was more important for the normal growth of bone at an early age, until, in fact, some essential process in the body was in good working order.

(2) The relation of the antirachitic factor to the energy-bearing portion of the diet. It was shown that more accessory factor was required to keep the growth of bone normal when the puppies ate more bread. The offending element of the diet was probably carbohydrate. On the other hand, evidence was accumulating which indicated that additional protein in the diet assisted any antirachitic factor present, so that the production of rickets, so far as diet was concerned, depended on a wrong balance between the amounts of protein, carbohydrate, and antirachitic accessory factor in the diet.

(3) The part played by exercise in the ætiology of rickets. The importance of muscular movements in relation to rickets was discussed and was shown to be secondary to diet. It was pointed out that the effects of exercise and protein could probably be associated in their action of assisting the antirachitic factor by the fact that both were stimulants to the metabolism.

(4) The importance of the animal experimental results to child nutrition. In this connexion the relative amount of rickets and bad teeth in the Jewish and Gentile children of Leeds (1902) according to the investigations of Mr. William Hall were discussed. Mr. Hall's findings as to the cause of the great differences were purely dietetic and wholly in agreement with the expectation based on the animal experiments recently carried out. The low infantile death-rate, absence of rickets, and production of perfect teeth in the inhabitants of the Island of Lewis were then mentioned as being almost certainly due to the diet of the people. The dreadful hygienic conditions of their houses did not prevent these excellent results seen in infant life in the island.

Growth Factors.

Professor D. NOEL PATON said that the physiologist would always be ready to acknowledge his indebtedness to the clinician whose work and observations had suggested to him so many of his most profitable lines of research, and he was trying to repay the debt by applying some part of his time to the solution of problems of importance to the clinician. In doing this it was his duty to present for the acceptance of his clinical brethren only those results which had been thoroughly tested, and he would remember that the man in practice was just as able as he to assess the value of the evidence presented and would not insult his intelligence by asking his acceptance of statements without that evidence being given. The contrary was what he objected to in the attitude of many physiologists to the present craze for vitamines, a horrible name, since we did not know that, even if they existed, they were amines, or had to do with life. Our knowledge of the subject could be briefly stated: 1. Hopkins, Willcox, Osborne, and Mendel had shown that minimal quantities of certain amino-acids were necessary for growth. They were the limiting factors for growth. 2. The same had been shown by MacCollum and others for inorganic substances, chiefly calcium and phosphorus. 3. In various animals it had been shown that the absence of some water-soluble food constituent or constituents led to arrest of growth and death, or to the onset of scurvy or beri-beri. 4. In rats and mice it had been shown that minimal quantities of certain fatty mixtures—e.g., of milk-fat or cod-liver oil—were necessary constituents of the diet for growth. With a deficient supply of these growth was arrested in these animals. In dogs, according to Mellanby, growth was not arrested, but rickets was produced. Of their effect on other animals we knew nothing. On such a basis had we any right to draw far-reaching conclusions? Why did not clinicians arrange a series of experiments in institutions to study the effects of these substances instead of being satisfied with personal experience or remaining content to argue from the divergent results in rats and puppies to the human subject?

Dietary Factors in Rickets.

His own work had been done on rickets and he would confine himself to the evidence that this was a disease due to want of vitamines. In doing so he would refer to the report of the Special Vitamines Committee of the Medical Research Committee. That part which dealt with rickets was certainly a request to accept statements unsupported by evidence. Dr. Leonard Findlay in 1908 reviewed the existing evidence, and recorded a series of experiments upon 16 puppies which he considered proved that confinement and not diet was the determining factor in causing rickets. He found that puppies fed on bread and water simply wasted and died without developing rickets, in the same way that rats wanting the fat-soluble substance wasted and died. All the eight puppies which were kept confined developed rickets; the five not confined, upon the same diet of porridge and milk, did not do so. Mellanby criticised the results on the supposition that Findlay gave only 175 c.cm. of milk, a purely gratuitous assumption. They had an abundance of milk. He further suggested that the diet was not a healthy one because two of the puppies died. It was the diet on which most of the puppies in Scotland were reared. How many of his 200 dogs died? His (the speaker's) criticism of Findlay's experiments was that only in one case were the confined puppies and the checks of the same litter, and it was unjustifiable to argue from results obtained from different litters, since the susceptibility of strains was varied.

The Vitamines Committee's Report.

The report of the Vitamines Committee was avowedly based on Mellanby's results. We could only judge of

its value from the results which had been published. These appeared in THE LANCET of March 15th, 1919. He stated that he cleared the way for his dietary experiments by a series of experiments to show that other factors were not operative. These experiments he did not record and we could not estimate their value, but, since then, in a letter to the speaker, he had stated that they consisted in *(a)* repetition of exercises and bad hygienic conditions, poor ventilation, and darkness; *(b)* trying thorium diet; *(c)* removal of lymphatics to limbs; and *(d)* effect of reduction of oxidation by drugs. It was difficult to understand how they were expected to throw any light upon the development of rickets. Upon the influence of the dietary factors he had recorded observations upon 33 pups, 10 normal and 13 which developed rickets. Presumably the experiments selected for publication were not the least convincing of the series. When the records were examined it was found that the dogs grouped together *were not always of the same litter*. To contrast animals of different litters was, as already stated, wholly unjustifiable, since the susceptibility of strains to rickets varied very largely. Further, in his groups the pups were not always killed at the same age, and yet the calcium content of the bones was compared, although, as everyone knew, this varied with age. The same puppy was included in different groups.

In this small series of observations no less than 13 substances were tested, and conclusions were drawn as to which of these allowed and which prevented rickets. In the report of the Vitamines Committee a list of 13 substances which did not prevent and 11 which did prevent rickets was given, with no published evidence except that of Mellanby's paper. Certainly on such a basis it was ridiculous to ask any reasonable man to accept the conclusions (1) that rickets was a deficiency disease due to the absence of an accessory food factor identical with the fat-soluble substance; and (2) that certain specified articles of food prevented its onset, while others did not prevent it.

Professor Paton's Experiments.

The experiments which he (Professor Paton) and his collaborators had carried out, and which were recorded in the *British Medical Journal* of Dec. 7th, 1918, were made upon 17 puppies of two litters. Their main object was to get rickety pups and sound pups of the same litter for examination, but a test was also afforded of the relative influence of diet and open-air life. From each litter two pups were sent to the country, kept in a large yard, and fed upon oatmeal porridge and skimmed milk, so that each had about 2·8 g. of milk-fat per day. Those kept in the laboratory had whole milk containing during the first period of their growth 3 g. of milk-fat per day and during the latter period 6 g. In addition to this, three of the puppies had butter (not margarine) in an amount to yield, along with milk, 14 g. of milk-fat. The puppies kept in the country on the lower fat intake remained absolutely normal. All the puppies kept in the laboratory developed rickets, one of those receiving butter becoming most markedly affected. It had been suggested that puppies kept in the country got their fat-soluble substance by eating grass. Unfortunately for this theory the carnivorous alimentary canal did not digest grass, even when swallowed. It was generally vomited at once. It had further been argued that confinement might so depress digestion that the fat-soluble substance was not absorbed in the food, but there was no indication of disturbed digestion, and Mellanby had stated that confinement did not cause rickets.

In the Vitamines Committee's report no reference was made to Bull's interesting investigations of an epidemic of rickets among fox-hound puppies at Adelaide in 1912.[1] The kennel had previously been free from rickets. The epidemic when it broke out affected practically all the puppies. The animals had been fed on boiled meat and pollard, the only change being that before the outbreak the pollard had been substituted for wheaten meal. He found that the most potent factor in preventing and curing the condition was to remove the pups from the yard in which they had been kept. It was not until a new yard was prepared for the puppies that the occurrence of the disease was prevented, even when the old diet was continued.

Investigations on Negro Children.

The series of investigations which had been given the most prominence was that of Hess and Unger upon negro children in New York. According to the authors about 90 per cent. of these developed rickets. From observations upon 32 children they stated that the administration of 54 oz. of cod-liver oil in six months prevented the onset of rickets in 93 per cent. of the cases. Their tables had been largely used by the champions of the vitamine theory, but it would have been well had they read the paper. Ten out of the 33 children treated had rickets before the oil was administered, and they had merely improved during the six months under oil. As a matter of fact, 6 were noted as "unchanged" and 2 "progressed"—i.e., became worse. This hardly justified the statement as regards the prophylactic action of oil. Miss Ferguson, under the direction of Dr. Findlay, had repeated these observations upon 62 children of from 1½ to 12 months of age, giving them cod-liver oil to about 2 oz. per week (i.e., about the same amount as given by Hess and Unger) for about six months. The cases were examined before starting treatment and were all free from rickets. They were examined again at the end of six months by Dr. Findlay, who reported that out of 27 oil and 30 check cases present at the examination there were:—

	Oil cases.	Check cases.
Non-rachitic	23 = 85 per cent.	10 = 33 per cent.
Rachitic	3 = 11 ,,	18 = 60 ,,
Doubtful	1 = 4 ,,	2 = 7 ,,

Miss Ferguson, in 1917, undertook an investigation of the diets and social conditions of families in which rickets occurred and in which rickets had not occurred—47 families in all—of the same social class in the city of Glasgow, where rickets was very prevalent. She found no marked difference in the dietary habits; both sets of families used very small quantities of milk, the average in the non-rachitic families being 6·7 oz. per person per day, and in the rachitic families 4·7 oz. In quite a number of the non-rachitic families the milk consumed was as small in amount as in any of the rachitic. Mellanby criticised these results on the grounds that (1) such family studies throw no light on the feeding of infants, and (2) they show that in the families with rickets the children got less of "substances delaying or preventing rickets." He cannot have it both ways. The criticism of family diets made in the report of the Vitamines Committee that the amount of the proximate principles is given but not the actual foods used is untrue, so far as the Glasgow studies are concerned.

Criticism of the Findings of the Vitamines Committee.

Professor Paton then referred to the most recent publication by Hess and Unger on "The Clinical Rôle of the Fat-Soluble Vitamin; its Relation to Rickets."[2] It was a most cogent criticism of the findings of the Vitamines Committee, supported by a valuable series of observations. They showed that the bone changes in scurvy might simulate those of rickets. They found that rickets developed, notwithstanding an abundance of fresh air. They recorded a series of experiments to show that infants getting abundance of milk-fat became rickety, whilst others kept upon a fat-poor diet remained almost free from the disease. They concluded:

"It would lead too far afield to discuss the various theories that have been advanced to account for the occurrence of rickets, and, moreover, it would not be profitable at the present time as the data are inadequate. There seem to be several causes at work rendering the unravelling of the problem so difficult that there is a difference of opinion, not only as to the particular dietary factor that is at fault, but even as to whether rickets is to be considered a disorder of dietetic origin. It should not be lost sight of that there is a prenatal factor

[1] Journal of Comparative Pathology, vol. xxxi., 1918.

[2] Journal of the American Medical Association, Jan. 24th, 1920.

involved. The fact that the negro infant, living side by side with the white, in the larger cities, and obtaining milk from the same source develops rickets so frequently and so markedly, indicates that there are important influences to be reckoned with in addition to the food. ..... Rickets frequently develops in infants receiving too much milk rich in fats, proteins, and salts. It seems impossible to bring this fact into consonance with a deficiency disease, whatever may be its nature, using this term in the commonly accepted sense. Our study shows that the fat-soluble vitamin is not the controlling influence; that infants develop rickets while receiving a full amount of this principle, and that they do not manifest signs, although deprived of this vitamin for many months, at the most vulnerable period of their lives. It is impossible to interpret the contrary conclusion which Mellanby came to as the result of his pioneer experiments on dogs, or to accept the term 'fat-soluble vitamin' as synonymous with 'antirachitic factor,' as Hopkins and Chick would have us do. ..... There is a growing danger of attributing every unexplained growth impulse to the new attractive, but ill-defined, vitamins—of their sharing with the secretion of the endocrine glands the fate of becoming the dumping ground for every unidentified factor. It should be borne in mind that there are other little understood factors and food reactions."

Rickets had certainly not yet been proved to be a deficiency disease due to the lack of some fat-soluble substance, nor had it been proved to be due to lack of exercise, but it was directly correlated with overcrowding and confinement in insanitary houses. The possibility, suggested by Morporgo, had never been disproved that it was primarily an infective disease. It might be due to non-specific organisms, possibly of fæcal origin, in the same way as goitre had been shown by McCarrison to be due to such infections. Certainly the more scrupulously clean the kennels were kept the less seemed to be the tendency for pups to develop rickets. This was indicated by Bull's observations. What was wanted was a combined coördinated investigation of the disease from the clinical and from the experimental side. Rickets was so prevalent and was of such enormous importance from the economic standpoint that it was well worthy of the most serious study. In the interests of the nation he hoped that the Medical Research Committee would be able to institute such a comprehensive investigation.

Clinical Evidence in Favour of a Dietetic Causation of Rickets.

Dr. ROBERT HUTCHISON said that the causation of rickets had always been a puzzle to clinicians, but up to the present the advent of the experimental pathologist in the field had only served to darken counsel. In his opinion Dr. Mellanby had certainly made out a prima-facie case for the view that rickets was the result of the absence of some accessory substance from the diet, although it did not appear to be the ordinary fat-soluble A. On the other hand, Professor Paton's experiments had led to an opposite conclusion, nor apparently did rats develop rickets when fed on a diet devoid of the growth vitamine. It should further be remembered that Herter[3] had fed young pigs on a fat-free diet for prolonged periods, and although their nutrition suffered they did not develop anything even suggesting rickets. If the results of experiment differed in rats, puppies, and pigs, how could one apply them to babies? Clinical evidence was in favour of the disease being a dietetic one, for it could be cured by altering the diet, the other factors in the environment remaining as they were. The dietetic fault was certainly not an all-round deficiency, for rickets was, perhaps, commoner in overfed than in underfed children. It seemed rather to be caused by an ill-balanced diet, and particularly by one which contained relative excess of carbohydrates. How this caused rickets it was impossible to say, but even Dr. Mellanby was unable to say how the absence of a "vitamine" caused it either. If an accessory substance played any part at all it must be that it was required to counteract some defect in the diet, and not merely that it supplied in itself something that was essential and without which rickets would develop no matter what the composition of the diet was on the whole. The same was true of scurvy. Infants rarely developed scurvy on a diet of condensed milk alone, but if a starchy food were added to the condensed milk scurvy was very apt to appear. The antiscorbutic accessory substance must in some way actively counteract the bad qualities of such a diet and not merely supply something lacking, for it is equally lacking in the condensed milk alone. It might be necessary to assume this kind of action on the part of the accessory substances, but it was attaching to them rather a different rôle from that which earlier investigations had credited them with. He was of opinion that, as regards rickets at least, we wanted more evidence before calling in the action of a hypothetical accessory substance at all. It must be remembered that vitamines were the latest dietetic "stunt"; one must be careful not to push them too far and not to draw sweeping practical conclusions from our present very inadequate knowledge of them.

Dr. C. J. MARTIN thought that from the epidemiology of the disease and clinical experience of the effect of dietetic treatment, there was little room for doubt that rickets was a deficiency disease. Dr. Mellanby's work was of the first importance; it orientated future inquiry. Professor Paton's contribution to the discussion, whilst exhibiting great discontent with the word, was not, in his opinion, a serious assault upon the position taken up by Dr. Mellanby, which was a moderate one. He would underline the remarks of both as to the care required in applying results upon one species of animal to another or to man, and gave the following estimate of the minimal requirements of antiscorbutic in terms of lemon-juice per kilogramme per day as an illustration. These figures had been arrived at by laborious experiments by his colleagues at the Lister Institute. They were as follows: rat, a negligible quantity; guinea-pig, 4·5 c.cm.; monkey, 0·6 c.cm.; man, probably about 0·7 c.cm. In fact, all this vitamine work wanted putting upon a quantitative basis. Until this was done discordant conclusions as to general principles would inevitably be arrived at. Unfortunately, as long as the accessory food factors had not been isolated and identified only an approximate estimation was possible. Anyhow, it would take years of patient labour. For some years it had been attempted by his colleagues and others at the Lister Institute in the case of the water-soluble B and the antiscorbutic principles. This had been of great practical value, especially during the war, for it had been possible to determine the content in a number of foodstuffs of these two vitamines. As an instance he gave the following list from a paper by Dr. H. Chick and Dr. E. J. Dalyell recently published[4] setting forth, weight for weight, the relative antiscorbutic value of some common articles of diet, taking that of lemon-juice as 100.

Fresh raw cabbage leaves or expressed juice	110	Fresh germinated peas	30
Fresh raw lemon-juice	100	,, raw carrot-juice	7·5
,, ,, orange ,, ...	100	,, ,, beet-juice less than	7·5
,, ,, swede ,, ...	60	,, ,, beef-juice ,, ,,	7·5
,, green beans	30	Potato, boiled 30 mins.	7·5
		New cow's milk	1 to 1·5

Similarly, provided with a rough unit, it had been possible to determine the effect of heating, keeping, and the preservation of food upon these two vitamines with an error of plus or minus 50 per cent.

Orange-Juice and Beef-Suet Cream.

Dr. E. A. BARTON said that he was anxious to show two substances which were being used with considerable success at University College Hospital Infant Department. The first was an orange-juice which was dispensed to all infants on an artificial diet bereft of antiscorbutic vitamine. It was suggested to him by Miss Chick. The orange entire was minced and expressed in a tincture press. The essential oil which existed in the rind served to preserve the juice for many days and even weeks. During the period when oranges were scarce and juiceless he tried last year some vegetable juice freshly expressed, notably that of lettuces, but found that the juice had disastrous results, for the juice of vegetables was a first-rate culture-medium for organisms, and smelt abominably after even a few hours. Preservation or heating was impossible if the vitamine was to be active. It had been suggested

[3] Journ. of Exper. Med., 1893, iii., 293.

[4] Ueber die Gefahr des Skorbuts in Wien, Wiener klinische Wochenschrift, 1919, xxxii., 1219.

that swede-juice should be tried, but poor women had no time to squeeze lettuces or scrape swedes, so during these few months the infants in his hands had to go without. The discovery of an efficient preservative for fresh vegetable juices had yet to be made.

The second substance shown was a cream which, being made of beef suet, contained a considerable amount of fat-soluble A. Marylebone cream, made of linseed oil, which he had formerly used, lacked this antirachitic vitamine, and in view of the researches made two years ago, it was decided to make a synthetic beef-suet cream. The difficulty in making suet into a satisfactory emulsion lay in the high melting point of suet, but this was overcome by the addition of 12 per cent. olive oil. The cream contained 25 per cent. fat exclusive of the oil, a percentage as high as or higher than ordinary skimmed cream from milk; it mixed well with all dilutions of milk, was palatable, easily digested, and under the microscope was seen to be quite a satisfactory emulsion. It was not expensive; it was free from danger of tubercle, and was now made commercially as "University Cream." The cream was composed as follows:—

Beef suet	40 oz.	Benzoic acid	35 gr.
Olive oil	5 oz.	Decoction of Irish moss	70 fl. oz.
Syrup...	25 fl. oz.	Water to	1 gal.

The oil was added to the melted suet and the benzoic acid dissolved in the mixture. The decoction was heated to about 60° and placed in the emulsifier, and the fats were then added at about the same temperature. The emulsion was then worked up and the syrup and water were added last.

A Rival Cream.

Dr. ERIC PRITCHARD explained that he had a rival cream to offer which was made from a combination of oleo-fat, pea-nut, and other oils which presented a composition of neutral fats and fatty acids which corresponded very closely with those existing in butter-fat. It was an improvement on the original Marylebone creams, and could be used with fat-free milks without detriment to nutrition, for it contained, he believed, a liberal quantity of the fat-soluble A factor. Dealing with the general question of vitamines, he remarked that there was no fear that the work of Dr. Mellanby and others would not be seriously regarded by clinicians; the danger rather was that the public generally would believe that these new discoveries were the solution of too many dietetic problems. Clinicians would be grateful to experimental physiologists if the latter would help to classify the varieties of malnutrition which depended on excess or deficiency of any food factor; for his part he thought the excess diseases were far more common than the deficiency diseases. He regarded pure cases of the latter as clinical luxuries, because they were so immediately cured by the giving of the lacking food factor. He thought the application of the title antirachitic factor to the fat-soluble A vitamine most unfortunate and retrograde, because such a name implied that rickets could be both caused and cured by the withholding and giving of this substance.

The first group of cases of rickets which he personally had examined was in infants who were grossly overfed with cream. For his part he regarded rickets as a terminal result of practically all varieties of malnutrition occurring in the infant and young child, and of sufficient duration to produce the characteristic changes. Rickets had been proved to be caused by almost every possible error in feeding; it was not due to one definite cause as Dr. Mellanby suggested. The effects of chronic infections certainly played a part in its production, and this, he thought, was the explanation of the cessation of rickets among the puppies referred to by Professor Paton when they were removed from certain particular kennels. He believed that resistance to infective disease was lowered by deprivation of the fat-soluble A factor.

Dr. W. M. FELDMAN was of opinion that there was probably more than one factor responsible for the production of rickets. He disagreed with Professor Paton that close confinement was one of the principal causes of the disease, and also with Dr. Mellanby that the lack of a fat-soluble vitamine was the only factor. He quoted cases of rickets in children of well-to-do and intelligent parents who were brought up on the most hygienic principles as regards fresh air, exercise, and feeding, and who showed signs of rickets, whilst, on the other hand, many children who were brought up under the most unhygienic conditions failed to show evidence of the disease. Dr. Feldman believed that heredity probably played an important rôle.

Rickets amongst Jewish Children.

Dr. J. LAWSON DICK said that he had been carrying out observations with regard to rickets among the Jewish children in the East End of London. These children were fed on cow's milk, yet 80 per cent. of them showed evidence of rickets. It occurred in breast-fed children, many of whom were kept at the breast for from 12–18 months, yet no one could say that there was likely to be lack of fat in the milk where Jewish mothers were concerned. On the other hand, there was no rickets in China or India, where the children were kept for a very long time at the breast, so that even two successive children might be breast-fed synchronously. An ætiology which presupposed a deficiency in fat-soluble substance was contrary to clinical experience, for there was an abundance of fat in children who were prone to rickets. Geographical considerations revealed that rickets was confined to the temperate zone, which was also that of greatest industrial activity. He considered that it was difficult to exclude a sufficient amount of vitamines from the diet of children in this country, while in China and Japan, where they were fed largely on rice, there was no rickets. In experimental observations on dogs it was difficult to exclude the incidence of rickets, but he thought that the changes in the teeth, which had been ascribed to rickets in the experimental studies of Dr. Mellanby, were not the changes of true rickets. He urged that rickets should be studied with a greater breadth of view.

Reply on the Discussion.

Dr. MELLANBY, in his reply, said that the question which Professor Noel Paton had raised as to the number of deaths among the dogs which he had experimented upon was beside the point, whereas the number of deaths among the dogs in the "confinement" experiments of Findlay was important in connexion with the interpretation of the results. With regard to the evidences, he pointed out that the investigations were as yet far from finished, and no complete account had yet been published, but his experiments, as far as they had proceeded, were open to inspection by anyone who wished. He wished to disclaim any responsibility for the exaggerated accounts of the work which had appeared.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on March 4th, Mr. J. D. MALCOLM, the President, being in the chair.

Interstitial Ectopic Gestation.

Mr. ZACHARY COPE showed a specimen of Interstitial Ectopic Gestation which had ruptured at the end of the fourth month of pregnancy. The patient was 40 years old, and had had three previous pregnancies, which had terminated in miscarriages at the seventh, fifth, and second month of pregnancy. Six years had elapsed since the last miscarriage. Her present illness started with acute abdominal pain and vomiting 36 hours prior to admission. When admitted to hospital ruptured extra-uterine gestation was diagnosed and confirmed at operation. Supravaginal hysterectomy was performed, and the patient made a speedy recovery. The specimen showed a gestation sac about 4 in. by 2½ in. by 2¼ in. with a fœtus corresponding to a three months pregnancy. The left Fallopian tube and round ligament were attached to the outer side of the sac, which had no connexion with the uterine cavity. There was a rupture of the sac on the postero-superior aspect where the placenta was situated. Mr. Cope said that less than a hundred cases of the kind had

been recorded. In this case the patient was older than usual, the sac had ruptured rather later than was customary, and surgical advice was sought after a longer duration of acute symptoms than had been noted in most of the recorded cases. In cases seen so late as the fourth month he was of opinion that supra-vaginal hysterectomy was the soundest surgical procedure.

The PRESIDENT said that there was a possible difference of opinion on the interesting case shown. He suspected a cornual pregnancy.

Dr. T. W. EDEN suggested that the specimen should be referred to the Pathological Committee, and that Mr. Cope should obtain sections of the decidua to decide the point.

Mr. COPE thanked the members of the section for the interest shown in his specimen, of which he was having a drawing made, and would be glad to refer it to the Pathological Committee. Microscopic sections were being made.

Dr. S. GORDON LUKER read an account of a case of

Rupture of the Bladder Associated with a Retroverted Gravid Uterus.

The patient, a 4-para, aged 38, was admitted to the London Hospital complaining of acute abdominal pain and vomiting; she stated that she had felt something burst in her stomach that day; there had been a previous attack of abdominal pain with some difficulty in micturition. She was 14 weeks pregnant. Laparotomy was performed and a linear tear 1 inch long was found in the posterior wall of the bladder. The tear was sutured and the abdomen closed with drainage. The bladder was healthy. The patient aborted two days later, but otherwise made an uneventful recovery.

The PRESIDENT said he had never heard of a similar case. The good result showed how efficacious prompt skilful treatment could be, and also of what little consequence a ruptured bladder might be under certain circumstances.

Mr. COMYNS BERKELEY asked whether there was any gangrenous cystitis, as the rupture of a healthy bladder was not common.

Dr. LUKER, in reply, said that the bladder was apparently quite healthy.

Blood Transfusion in Secondary Hæmorrhage.

Dr. LUKER then described a case of Secondary Hæmorrhage from a Laceration of the Cervix Uteri of a Puerperal Woman treated by blood transfusion and panhysterectomy. In this case the patient was a 4-para, aged 30. Labour had been prolonged, and she had been delivered with forceps by her medical attendant before the os uteri was fully dilated. A severe hæmorrhage occurred on the ninth day of the puerperium, and this recurred on the eleventh day; she was then sent up to the London Hospital. On examination under anæsthesia a tear 4 cm. long was seen on the left side of the cervix; the tear was septic but not bleeding; exploration of the uterus was negative; a hot douche was given and the cervix was plugged. Two further hæmorrhages occurred at intervals of about 24 hours, and after the second the patient was almost pulseless. Blood transfusion (1 pint of citrated blood) and panhysterectomy were performed and the patient survived and is now in good health.

The PRESIDENT and Mr. EARDLEY HOLLAND congratulated Dr. Luker on the courageous operation. Mr. Holland also suggested that it might not be clear from the paper that the blood came from a branch of the uterine artery and not from the interior of the uterus. He had had the privilege of seeing the case and knew that the bleeding was from the artery.

Dr. LAPTHORNE SMITH said he had removed a uterus for sepsis 40 years ago, and the patient recovered. In early cases patients did recover with this treatment, but in late cases they died. It was an important field for further investigation.

Dr. EDEN said that the important point was the laceration of 4 cm. long. It was clearly right to remove the uterus.

Dr. H. RUSSELL ANDREWS recalled a patient sent into the London Hospital two days after a four months fœtus had been removed by rapid dilatation of the cervix with Hegar's dilators. The patient had lost much blood. The speaker had removed the greater part of the fœtal skull from the right broad ligament. After 48 hours a secondary severe hæmorrhage nearly killed the patient. He put in plugging; the patient developed a mass in the right iliac fossa, chiefly cellulitis and not hæmatoma. Another hæmorrhage 48 hours after made him debate whether to remove the uterus, but he was doubtful if the patient would survive the operation. However, no more bleeding occurred.

Dr. LUKER, in reply, regretted that various points had not been made quite clear. The tear in the uterus was septic at the first examination, and later a spurting artery was actually seen in the cervix. There was no possibility of suture owing to the sepsis.

Mr. GORDON LEY read a paper on an Analysis of 50 Cases of Utero-placental Apoplexy (Accidental Hæmorrhage).

TUBERCULOSIS SOCIETY.

THE NEED FOR A DIPLOMA IN TUBERCULOSIS.

AT a general meeting of this society held on Feb. 21st. Dr. H. DE CARLE WOODCOCK, the President, being in the chair, Dr. HALLIDAY SUTHERLAND opened a discussion upon the Need for a Diploma in Tuberculosis. He said that, as in other specialised branches of medicine, the public should be protected against inefficiency by fixing a minimum of knowledge in tuberculosis as essential for holding responsible positions in the health service of the country. It was not sufficiently recognised that tuberculosis entered into every phase of life from early youth to old age, and this scant attention had resulted both in faulty and late diagnosis. This state of affairs must be changed before any real progress could be made in the campaign. Little was taught and but little required in a student's passage through the ordinary degree for medicine, and in the curriculums of most schools only two or three lectures at most were given and no practical experience exacted. Dr. Sutherland referred to the recommendations of the Interdepartmental Committee of 1912, and deplored the fact that the most important of these had never been put into effect. He considered that practitioners should attend dispensaries both for study and help; that dispensary teaching should be brought into every medical school; that tuberculosis officers should have had general and special experience before their appointment; that tuberculosis workers should have at least one month's post-graduate study in every three years. These suggestions were all embodied in the Committee's report, and they would go a long way to overcoming the present difficulties. A great deal of harm was done by men going into the tuberculosis service who did not gain the confidence of the general practitioner, which was so essential, with resulting lack of uniformity of methods and records. The sanatorium and dispensary have not failed in principle, but rather the personnel has been found wanting. There were too few places at which a proper course of instruction in tuberculosis could be obtained; Edinburgh had the only chair and Glasgow the only demonstratorship in tuberculosis; the number of teaching centres should be increased and the course should consist of at least 40 lectures, with practical demonstration. He thought that the teaching would be more successful if at the end of the course there was a diploma to be obtained, constituting a hall-mark, which local authorities might demand of applicants before appointment.

Discussion.

The PRESIDENT thought a diploma essential; it would settle the dispute with the medical officers of health. He had tried to get tuberculosis brought more into the curriculum of the University of Leeds, but had failed, and considered that public opinion must be sought in order to get recognition of its importance.

Sir HENRY GAUVAIN said that there were officers at present holding responsible positions in sanatoriums

who had never seen the inside of a dispensary, and the converse could be said of some tuberculosis officers. Many men who had been down to Alton admitted that they did not know that they ought to be familiar with surgical tuberculosis.

Dr. J. SORLEY opposed the proposal for a diploma, but considered that the Interdepartmental Committee's recommendations should be put into force. He was not in favour of picking out one disease more than another, and thought that the D.P.H. should embrace all subjects of public health. If not the D.P.H., then the M.R.C.P. would give the necessary status and confidence.

Dr. HORACE WILSON thought tuberculosis too big a subject to be included in the D.P.H., and that a diploma was needed to prevent unsuitable men from throwing discredit on the service.

Dr. NATHAN RAW, M.P., said that tuberculosis demanded the widest study, and the tuberculosis officer must have long clinical study to fit him for his work. He did not think the time was ripe for a special diploma, but the interest of medical schools should be obtained and teachers should be appointed. When this was done, and the men had been taught, the diploma would come as a matter of course. The Medico-Psychological Society had at one time created a diploma, but had failed to enforce it. He did not think it would be long before there was a separate department in the Ministry of Health for tuberculosis.

Dr. HALLIDAY SUTHERLAND replying, agreed that the diploma would help to settle the outstanding differences with the medical officers of health, and would work in the direction of a separate service. Theory was not enough to produce efficiency, but practice would develop better on a sound theoretic basis.

LIVERPOOL MEDICAL INSTITUTION.—At a meeting of the Pathological Section held on Feb. 20th, with Dr. J. E. Gemmell, the President, in the chair, Dr. R. Stenhouse Williams read a note on the Bacterial Content and Keeping Qualities of Clean Milk Produced for Commercial Purposes. He presented the results of work upon methods of milk production which had been carried out by Miss K. Freear and Miss F. Knight at the Research Institute in Dairying at University College, Reading. A series of weekly examinations of clean-bottled milk produced for commercial purposes, extending from November, 1916, to December, 1918, demonstrated that the bacterial content of such milk only rose above the 10,000 limit on three occasions, and was only really unsatisfactory in one instance. These results were obtained with milk taken in a special milking shed from washed cows, by clean workers, in steam-sterilised vessels. The cost and upkeep of a special milking shed was an added charge on the price of milk, and further experiments were detailed which demonstrated the possibility of producing clean milk in an ordinary cow byre. From these experiments the following facts emerged: (1) it was possible to produce clean milk in an ordinary cow byre; (2) to ensure success the cows should be clipped and washed, the workers clean, and the utensils steam-sterilised; (3) the covered milk bucket, when properly used, was of great assistance in keeping out dirt from the milk, but, in the hands of unskilled workers, might be an added source of contamination to the milk. Dr. Williams laid stress on the importance to the dairy farmer of this last observation. Dr. Williams further contributed a paper on the Presence of Tubercle Bacilli in the Fæces of Apparently Healthy Cows. He recorded an investigation carried out by himself, in collaboration with Mr. W. A. Hoy, on behalf of the Medical Research Committee. It was shown that about 2 per cent. of apparently healthy cows had been found to be excreting tubercle bacilli in the fæces. Five such cows had been found in four of the 14 farms in which it had been possible to examine the fæces of nearly all the cows in milk. The results were subject to a considerable margin of error, inasmuch as each cow was examined on a single occasion, only a very small fraction of the daily excreta could be tested, and the method of examination (antiformin) adopted in the earlier stages of the work did not appear to be so satisfactory as the method (Petroff) finally utilised. He showed that the excreta of such cows, when kept in a dark cellar, remained infective for at least 12 months, and, when spread upon pasture land or added to liquid manure, remained infective for at least four months. The possible influence of such material upon the health of other beasts in the farm was pointed out.—Both note and paper were copiously illustrated by charts.

Reviews and Notices of Books.

HISTORY OF THE GREAT WAR: NAVAL OPERATIONS.

Vol. I. Based on Official Documents. By Direction of the Historical Section of the Committee of Imperial Defence. By Sir JULIAN S. CORBETT. London and New York: Longmans, Green and Co. 1920. Pp. 470 and maps. 17*s.* 6*d.*

THE first volume of the History of the Great War in regard to naval operations has been issued this week, written by Sir Julian S. Corbett. The history is based on official documents to which the Lords Commissioners of the Admiralty have given access, though the presentation of the facts is, of course, the author's own. The period dealt with includes the preparations for war during the years immediately preceding the outbreak of hostilities, and the progress of the naval operations down to the time when Great Britain secured a working command of the ocean trade-routes by the Battle of the Falklands on Dec. 8th, 1914. The work is written in collaboration with the staff of the Historical Section of the Committee of Imperial Defence, and it is hoped will be complete in four or five volumes. Separate sections will appear on the effect of naval operations on seaborne trade, by Mr. C. E. Fayle, and on the Merchant Navy by Mr. Archibald Hurd.

The time-period covered by this large and important volume is comparatively short, if we except pre-war references, but Sir Julian Corbett has been at pains to explain the mutual connexion and meaning of the operations which he describes, as well as their policy and relations to diplomatic activity and military exigencies. In this way we obtain a full and satisfactory narrative, which could not with advantage have been abbreviated to make the size of the book proportionate to the time concerned. The story, as he sets it out, is one of high endeavour, great performance, and hideous disappointments, as well as of national courage and enterprise which rose superior to these disappointments.

The style is so admirable in its clearness, and the events so sharp with interest, that most readers will read the book from cover to cover, even though first turning to such chapters as those which describe the development of the German submarine tactics, the operations of our Fleet on the Belgian coast, or the exploits of the *Karlsruhe*, *Emden*, and *Koenigsberg*. At last we have a consecutive story of the location, chase, and escape of the *Goeben*, described by Sir Julian Corbett as a situation which "opened in so promising a way that it might well have resulted in a success priceless at the outbreak of the war," but which culminated in severe disappointment. He considers that the whole blame did not rest on the shoulders of the admiral, rapid changes in the situation making it impossible for the Admiralty to keep him adequately informed. But of the fact that the *Goeben* was able to enter the Dardanelles in safety, Sir Julian Corbett, speaking of German tactics, says: "So completely, indeed, did the risky venture turn a desperate situation into one of high moral and material advantage, that for the credit of German statemanship it goes far to balance the cardinal blunder of attacking France through Belgium." Such episodes as the Gorleston raid, the crossing of the Pacific by Admiral von Spee, and the closing chapters narrating operations leading up to the Battle of the Falklands will be read with the deepest interest.

Practically nothing is said about the naval medical establishment, but the medical history of the war is appearing in the *Journal of the Royal Naval Medical Service*.

In a separate case with the book are published maps and charts illustrating some of the episodes where such assistance is necessary to their comprehension, while the volume itself also has admirable maps, plans, and diagrams, the Battle of the Falklands being elaborately explained by their means.

A GUIDE TO GYNÆCOLOGY IN GENERAL PRACTICE.

Second edition. By COMYNS BERKELEY, M.A., M.D., M.C. Cantab., F.R.C.P. Lond., Obstetrical and Gynæcological Surgeon to Middlesex Hospital, &c.; and VICTOR BONNEY, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng., M.R.C.P. Lond., Assistant Obstetrical and Gynæcological Surgeon to Middlesex Hospital, &c. London: Henry Frowde. 1919. Pp. 467. 31*s*.

THIS book is written for the practitioner to assist him in supplementing the knowledge of his subject, obtained during his studentship, with a practical understanding of its clinical intricacies. The subject-matter is arranged in a natural sequence: Part I. is occupied with Examination Methods; Parts II. and III. with a consideration of the Significance of Symptoms and the Interpretation of Physical Signs; and in Part IV. the various Methods of Treatment are described. In Part V. a very full account of the Medico-legal Aspects of Gynæcology is included, and this is one of the most useful sections in the book. It is a subject at times of considerable importance to the practitioner and one upon which there is very little in the ordinary text-books of forensic medicine to guide him when in difficulties. All the questions associated with such conditions as nullity of marriage, rape, criminal abortion, evidence of pregnancy, foreign bodies left in the abdomen and other cavities, and possible claims for compensation in connexion with gynæcological conditions are fully considered, and sound advice is given.

The arrangement of the whole work is particularly useful and the various symptoms and physical signs are discussed in very complete detail, so that there is no condition likely to be met with in a gynæcological case about which the practitioner will not obtain real help and guidance from this work. In the new edition the part dealing with Criminal Abortion has been exhaustively revised, and sections on Radium and X Ray Treatment have been added. The authors have duplicated their prescriptions according to the ingenious method suggested by Dr. Verdon Roe. He has pointed out that the figures indicating the number of grammes and cubic centimetres in a prescription for 15 doses are the same as those indicating the number of grains and minims for a single dose according to the English system. We notice one or two obvious misprints in these prescriptions. The illustrations are very good and well reproduced. We could not, however, agree with the method of bimanual abdominal palpation as represented in Fig. 16, as the whole essence of successful abdominal palpation is the use of the palms of the hands and not of the tips of the fingers. Why, we wonder, do the authors use the unusual term, "palpation nephroleptique?"

It is interesting to find the statement that dilatation of the cervix cures some 90 per cent. of cases of spasmodic dysmenorrhœa, while in another well-known and widely read English text-book on gynæcology we are told that this operation is practically useless for this condition. A considerable space is devoted to the advantages of enucleation of fibroid tumours; in this we fancy the author's teaching is opposed to that of the majority of English gynæcological surgeons. The book is arranged in a distinctly novel manner, is interesting to read, and should prove of great service to the practitioner.

TOXINES ET ANTITOXINES.

Par M. NICOLLE, E. CÉSARI, C. JOUAN. Paris: Masson et Cie. 1919. Pp. 123. 5 francs.

As we gather from the preface, this monograph is a résumé of a large number of original articles contributed to French scientific journals over a period of many years, by the authors whose names appear on the cover of the book and by some of their colleagues. The complete bibliography of these occasional articles is given in the front of the monograph before us. The work itself is a simple, lucid account, systematically arranged, of toxins and their antibodies. There are no laboratory details and no discursive accounts of theories. The first half of the book deals with the principal characteristics of toxins, both "soluble" and "solid" (i.e., filtrates and bacteria respectively). The second half deals with hypersensitiveness, anaphylaxis, the various antibodies, &c., and closes with a comprehensive chapter on the general conception of antigens and antibodies.

The book is written on an essentially personal note expressing the views of the authors. It is, moreover, characterised throughout by a clarity of thought and by a systematised arrangement of text which other writers on immunity might very well copy. In common with many others of these admirable little French monographs the work contains no subject index.

THE ENGINES OF THE HUMAN BODY.

By ARTHUR KEITH, M.D., LL.D., F.R.S. London: Williams and Norgate. 1920. Pp. 284. 12*s*. 6*d*.

THIS book contains the substance of the lectures which Professor Keith delivered at the Royal Institution during the Christmas vacation, 1916–17. From first to last the structure and functions of the various parts of the human body are compared, very closely and ingeniously, to the creations of the mechanical engineer. Several writers have drawn comparisons between the human body and an engine, but few have attempted to carry the comparison so far, and none have proceeded to interpret in such a clear and fascinating manner the details of function which Professor Keith has incorporated into this interesting story.

It is a great achievement to overcome so simply one of the chief difficulties in teaching popular anatomy—in the absence of information derived from dissecting, to make clear the mechanism of the numerous activities of all the systems and their inter-relationship, without obscuring the issue by lengthy descriptions and collections of facts about the details of structure. On this point teachers of anatomy in our medical schools have much to learn from Professor Keith, since only too frequently instruction in anatomy consists of a vast accumulation of data with little or no regard to the bearing of structure upon function. "The Engines of the Human Body," although written chiefly for the general reader, indirectly demonstrates the advantages to be gained by anatomists ceasing to be mere purveyors of fact about the cadaver; it furthermore contains many suggestions for the attainment of this improvement. Popular anatomy has to refer to the living; it is obviously of even greater importance that anatomy for students of medicine should do so too.

We therefore suggest that this book may be read with advantage, although for different reasons, by the anatomist as well as the general reader. However ingeniously popular anatomy may be presented it must inevitably have very definite limitations, which emphasise the importance of familiarity by dissection with the organs and tissues of the body. When considering the teaching of popular anatomy it is always apparent that no description, illustration, or even model can replace the method of acquiring, by the senses of sight and touch, an accurate knowledge of the subject and a true sense of proportion.

THE FROHSE ANATOMICAL CHARTS.

American edition. London and Edinburgh: W. and A. K. Johnston; Chicago: A. J. Nystrom and Co. Seven plates, each 42 in. by 64 in. Price, complete, mounted on cotton, £11. Single plates £1 10*s*. each.

THIS well-known series of plates has been redrawn and revised by Professor Max Brödel, of Johns Hopkins Medical School, who has also added some new diagrams of the heart and circulatory system and of the internal structure of the ear. The seven plates of the new series contain respectively (1) the human skeleton; (2) muscles; (3) nervous and circulatory system; (4) circulation diagram, the heart, blood-vessels, skin; (5) the ear and the eye; (6) the viscera; (7) the teeth and section through the head. Most of the drawings are life-size, and in many cases separate organs and tissues are shown greatly magnified. A key is supplied giving a comprehensive list in Latin and English of the various parts of the body. The lithographing and colouring are admirably done, and there is advantage in the arrangement which enables comparison to be made between related subjects.

THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES.

By E. R. STITT. Third edition. London: H. K. Lewis and Co., Ltd. 1919. With 119 illustrations and 1 plate. Pp. xvi. + 534. 14s.

THIS book has now reached its third edition and may be consulted with advantage by all students of tropical medicine. It will be found to contain a mass of interesting material, fairly well up to date and instructive. Much has recently been written on diseases of a tropical nature, but even so it is extraordinary how little that is new has really been evolved. The treatment of malaria, for example, stands at the present moment much where it stood 20 years ago, while dysentery has been written on ad nauseam without any proportionate light being thrown upon its therapeutics. There is a tendency here and there in the book to ignore older work for more recent observations, a fault which might have been avoided by a closer study of the literature. This is specially noticeable in the parts dealing with filariasis and ulcerating granuloma. No mention is made of the work of the South Americans and of Low and Newham on the treatment of the latter disease with intravenous injections of antimony, though Breinl's name is mentioned. On the other hand, the dysentery treatment is quite out of date. Emetine bismuth iodide is not even mentioned, and none of Dobell's recent work on the amœbæ inhabiting the intestine of man is incorporated in the text.

SPRING-TIME AND OTHER ESSAYS.

By Sir FRANCIS DARWIN, F.R.S. London: John Murray. 1920. Pp. 242. 7s. 6d. net.

Sir Francis Darwin is known as a skilled botanist, and as one who worthily carries on the traditions of a family which has produced more able men of science than perhaps any other single family in the world. He was educated for the medical profession, and got as far as taking his M.B. degree at Cambridge, but at the suggestion of Dr. Klein he gave up further study of medicine and became assistant to his father.

The book now before us is a very good sample of that class of book which used to be called "Diversions of a ——" or "Idlings of a ——," the blank being filled up according to the profession or calling of the author. On the whole, we think that the botanical or quasi-botanical papers show the author at his best. Many of the essays are reviews, or what are apparently reviews, though they consist chiefly of excerpts from the books in question. One particularly charming paper is entitled "Recollections," its only fault being that there is not enough of them. Another deals with Sir Norman Moore's monumental History of St. Bartholomew's Hospital, which should certainly send any reader to the original. Yet a third talks pleasantly about Some Characters in Fiction. Sir Francis Darwin, we think rightly, gives the palm to Thackeray for the names of his characters, only we do not always agree with his choice. For instance, he is "particularly fond of Sir Lapin Warren, whose wife was just on the point of having her thirteenth child"; and also of the Revd. Felix Rabbits, who had 13 daughters. To our thinking these names savour too much of the harlequinade nomenclature of the old-fashioned pantomime. Everyone over 50 will remember the names of A. Pill, Chemist, or D. R. Y. Sand, Grocer, which used to appear on the back cloth. One of the best collection of Thackerayan names is the list given of guests as yelled by the usher in "A Dinner in the City" thus, "Mr. Hoggin! The Right Honourable the Earl of Bareacres! Mr. Snog! Mr. Braddle! Mr. Alderman Moodle! Mr. Justice Bunker! Lieutenant-General Sir Roger Bluff! Colonel Tucker! Mr. Tims!" They are so exactly the names that are heard on such occasions, and the rhythm of the collocation is perfect. But the cream of the book is to be found in the three essays dealing with plants—namely, "Spring-time," "The Traditional Names of English Plants," and "A Procession of Flowers." Here are the charm of the country, the knowledge of the skilled botanist, and a picture of the never ceasing wonder of the annual renewal of life.

HOME EXERCISES FOR SPINAL CURVATURES.

By R. TIMBERG, M.R.C.S., G.D. (Stockholm). Second edition. London: W. Heinemann (Medical Books), Ltd. 1920. Illustrated. Pp. 67. 6s. net.

THIS little book has a definite object, and the author wisely keeps that object in mind from beginning to end. The theme being the description of certain exercises, all extraneous matter is ruled out, save that which is essential to the proper understanding of them. The exercises are well selected from those in use in the department for physical remedies at St. Thomas's Hospital; they are described with precise detail and illustrated by a series of well-executed photographs. No attempt is made to theorise on spinal curvature or to discuss the relative merits of various forms of treatment. All reference is omitted to exercises which cannot be performed without help or, after preliminary instruction, without supervision. Thus the book is elementary and, as such, is just what is needed. The treatment of spinal curvature is of great importance. Children do not "grow out of it"; if disregarded it becomes progressively worse. Skilled treatment is essential, but success depends on voluntary effort at home between the periods of skilled help and instruction. It is to enable medical men and parents to guide this voluntary effort into proper channels that this book was written, and it will be found a sure and safe guide.

PRAKTISCHE BAKTERIOLOGIE.

Für Ärzte und Studierende. Von Dr. L. PANETH. Berlin and Vienna: Urban and Schwarzenberg. Pp. 158. 1920. M.8.

THIS small volume is an elementary introduction to practical bacteriology. It gives short accounts of ordinary bacteriological and serological technique, the preparation of media, and the different methods of staining bacteria. A special feature is made of the methods of isolating and identifying the organisms of typhoid, dysentery, and cholera. The main characteristics of the commoner organisms are described, and a description of the Wassermann reaction is included. The book is well printed. There are few illustrations.

THE FOUNDATIONS OF MUSIC.

By HENRY J. WATT, D. Phil. Cambridge: University Press. 1920. Pp. 240. 18s.

THE scope of Dr. Watt's book lies beyond the realms of physics and of physiology. He deals solely with the psychical appreciation of musical sounds, and does so ingeniously, profoundly, and with a measure of success. The foundations which he has laid stand in the darker recesses of musical theory, and involve assumptions which themselves call for extensive and detailed examination before they can be accepted as a basis for the further arguments. But for those with sufficient musical knowledge and interest in the theory of music, and with the capacity for hard and sustained psychological speculation, the book will well repay careful study. It is a real contribution to the systematic investigation of the psychology of one of the most obscure special senses, for the musical sense may be considered psychologically as something altogether beyond the sense of simple hearing.

JOURNALS.

British Journal of Experimental Pathology. Vol. I., No. 1. February, 1920. London: H. K. Lewis and Co., Ltd. Annual Subscription, £2; single numbers, 7s. 6d.—This is the first number of a new journal devoted to experimental pathology. It is to be published bi-monthly, under the editorship of Drs. C. H. Browning, P. Fildes, W. E. Gye, E. L. Kennaway, E. H. Kettle, J. McIntosh, J. A. Murray, W. J. Tulloch, and C. M. Wilson. The editors hope to be able to provide early publication of papers, a boon to workers in pathology, who have long felt the disadvantages of delayed publication of their work. The journal comprises many new and interesting features—new at any rate in British scientific journals. It provides space, for example, in

each issue for a short description of new methods or neat "tips" which would not ordinarily be printed as a "paper"; it promises the occasional publication of critical reviews upon pathological subjects which, in the opinion of the editors, may be in need of critical survey. This, if competently and fairly done, will render the journal of inestimable value to laboratory workers and, one might add, to clinicians who take any interest in the growth of exact knowledge. The editors stress the word experimental in the title of the journal as well as in their notice of the scope of papers to be published. It appears, therefore, that the purely descriptive work of morbid anatomy will be left to be dealt with by existing journals. A natural consequence of this attitude is found in the close association of some of our leading physiologists with the journal; of the 16 eminent medical scientists whose names appear on the cover as supporting the new venture four are famous physiologists. But, curiously enough, there is not one professional physiologist in the list of editors. This will no doubt be altered in the future.

W. M. Bayliss, F.R.S.: Is Hæmolysed Blood Toxic? Professor Bayliss discusses this question and brings forward evidence to show that hæmolysis in itself is harmless. The practical importance of the matter lies in the common belief that "the serious results of transfusion of blood into a patient whose blood hæmolyses the corpuscles of that introduced" are due to the hæmolysis. The experiments upon which the belief that hæmolysed blood is toxic have been performed with rabbits. Professor Bayliss points out that rabbits are not suitable animals for such experiments owing to their aptitude to intra-vascular clotting. In the cat and dog homologous hæmolysed blood is, with very rare exceptions, innocuous. The ill-effects occasionally noted in blood transfusions are "an aspect of the action of foreign serum protein analogous to that responsible for anaphylactic shock." It is shown in the paper that hæmoglobin dissolved in plasma can act as an oxygen carrier.—The Determination of the Reaction of Bacteriological Culture Media, by J. McIntosh, M.D., and W. A. M. Smart, B.Sc. This is now one of the most popular subjects of bacteriological research. The method of standardising by titration, using phenolphthalein as indicator, and of expressing the final condition of the medium by the simple device introduced by Eyre, is no longer regarded as sufficient. The majority of bacteriologists now endeavour to obtain a more exact standardisation, either by means of the hydrogen electrode or by the use of a scale of indicators, which change colours at definite concentrations of hydrogen ions. Colorimetric methods are generally favoured, and have been recently popularised by the Medical Research Committee. In the paper under notice the authors propose titration of small volumes of media at room temperature. They recommend thymophthalein as indicator owing to the sharpness of the change of colour at a point on the alkaline side of neutrality. The paper contains a clear account of simple methods of preparing reliable media. The discussion of the ionic theory, mass action, and Guldberg and Waage's law might have been omitted; a reference to a standard text-book would have sufficed.—On Sympathetic Fever and Hyperpyrexial Heat Stroke, by W. Cramer. When suitable doses of β-tetrahydronaphthylamine are injected into animals, prolonged sympathetic stimulation associated with over-activity of the thyroid-adrenal apparatus is produced. Pyrexia is induced by increased heat-production accompanied by diminished heat loss; this pyrexia is called by the author sympathetic fever. The degree of pyrexia is chiefly dependent upon the climatic conditions of environment. Hyperpyrexia may be brought about by over-crowding the animals or by any means which interferes with the rate of cooling. This hyperpyrexia is similar to heat-stroke in man, which is discussed both as to its genesis and its rational treatment. The paper is full of information on the subject and is closely reasoned. It should be of particular value to those interested in ventilation and in factory and tropical conditions.

The Serological Classification of Meningococci, by P. Fildes, M.B. The author shows that meningococci may be divided into two distinct serological groups, independent of the arbitrary selection of standards.—On the Testing of Renal Efficiency, with Observations on the "Urea Coefficient," by H. Maclean and O. L. V. de Wesselow. Dr. Maclean has previously shown that in 50,000 apparently fit soldiers protein may be found in the urine of nearly 6 per cent., and that 2 per cent. show well-marked albuminuria. The presence of albumin, even when associated with casts, is not of great value as an indication of renal efficiency—the most important point the clinician has to decide in cases of renal disease. In this paper the authors describe in detail a simple and beautiful method of testing the efficiency of the kidneys. It is used by the Ministry of Pensions in the assessment of a patient's condition. A general scheme for the examination of renal conditions is given, which should be of great value to both physicians and surgeons.—Dr. Alexander Fleming and Dr. Francis J. Clemenger describe a simple method of recording gas production and oxygen absorption by bacteria in culture.—Dr. McIntosh gives a description of the simple preparation of a litmus solution suitable for bacteriological purposes.

New Inventions.

A NEW HEAD-LAMP.

THE lamp (Fig. 1) is on the well-known Klar principle, but with a reflector of speculum metal, so that it cannot break, and of sufficiently small size to allow of very useful peripheral vision when in place. The eye-holes are very large and placed on the converging lines for near binocular vision. The reflector (Fig. 2) is attached to a rigid head-band by an arm with an adjustable hinge at either end, permitting of movement only in the saggital plane. The lamp can thus be adjusted before washing up, and then brought down into place or pushed away from the face with a mop, no readjustment being needed, and no breach of asepsis being entailed. An automatic switch cuts off the current when the reflector is out of use, thus enabling it to be used off a pocket battery in the ward or clinic without waste. The front part of the head-band is sloped back through 15°, an angle which causes it to lie flat on practically every forehead and permits of the lamp being worn for long periods without discomfort. I have found the lamp useful not only for ear, nose, and throat work, but also for many operations in general surgery where the general illumination available was insufficient.

FIG. 1.

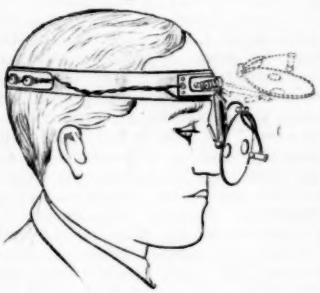

FIG. 2.

The lamp has been made for me by Messrs. Mayer and Phelps.

GILBERT CHUBB, M.B., D.Sc. Lond., F.R.C.S. Eng.

Devonshire-place, W.

THE LANCET.

LONDON: SATURDAY, MARCH 13, 1920.

The Future of the Voluntary Hospitals.

AT the present moment changes and developments closely affecting the profession of medicine may be regarded alike as a consequence of the world war, as a sequel to the institution of a Ministry of Health, and as a development of National Insurance. Each factor affects the voluntary hospitals, on which falls a share of the sad burden conferred on us by the broken warrior, at a time when international disorganisation has made poverty in money and scarcity in supplies a world-wide condition. The hospitals, founded by ancient charity for the medical relief of the poorer classes, are inextricably bound up with the training and the progress of our profession, and all that affects medicine must affect simultaneously the position and conduct of the voluntary hospitals. It seems to be assumed widely that the day of the voluntary hospital is over, and this despite official assurance that no despatch of the sort will be expedited by the Ministry. The direction which social evolution may take is another matter. A public willing to coöperate in order to bring about a more extended usefulness of medicine and of hospitals will play a part in such evolution, and laymen will no doubt be ready to be guided by the medical profession in their views as to the value of the voluntary system. For certainly this system is an expression of altruism on the professional side. The public should feel that if, in charitable guise, they bear the cost of institutions whose funds in practically no case bear any relation to their necessary expenditure, they also form the patients the preservation of whose health is aimed at. In the voluntary hospitals the public have good value in return for their expenditure. The charitable few, whose generosity in past times has founded individual hospitals, have their analogue in charitable thousands to-day, and these will not willingly let a system pass away so fraught with benefit for all. And yet the system no longer meets the national case. We remind our readers of the somewhat similar position which marked the evolution of our national system of education in 1870 and 22 years later. The difficulty in the framing and modification of the Education Acts was to secure public control, as a necessary concomitant of public maintenance, without destroying the special, or religious, character of the voluntary schools. The difficulty has been fairly well surmounted by a policy represented in the phrase "supplement and not supplant"; and this is the direction in which a solution of the hospital question may be expected.

For the development of medical and surgical science, and of our knowledge of the causes of disease, work done in the voluntary hospitals has been responsible, but the institutions have had laid upon them too heavy a burden. The education of medical students would be impossible without the hospitals, but thus there is added a load greater than the founders could ever have dreamed of. Coupled with all this comes an increasing recognition of medical science on the part of the general public. The demand for, and general acceptance of, National Insurance were symptoms of this appreciation, which the feats of medicine and surgery in the war have stimulated. So far as the hospitals are concerned, the result has been an increased demand for accommodation within their walls, quite apart from the number of those for whom institutional treatment is admittedly needed as a sequel to naval or military service. Mr. E. W. MORRIS, House-Governor of the London Hospital, in some interesting articles contributed recently to the *Daily Telegraph*, emphasised the fact that the hospitals of London are already overcrowded, and have long waiting lists of poor patients, whose admission has to be postponed till there are beds vacant for them. To these a host of persons in need of treatment can be added, who are not less poor than the manual worker, but are not in the ordinary sense objects of charity; and to these the doors of the voluntary hospitals are closed. Nor can they afford highly skilled surgical or medical assistance in nursing homes, at what, for want of a better phrase, we may call "market prices." This amounts to a plea for paying hospitals of various grades, and the day is gone by when the general practitioner would see any unfair rivalry in such institutions, for he himself would have the care of his patients, advising them what special assistance, if any, should be summoned. At the London Hospital a paying system has now been inaugurated, to run alongside of the gratuitous reception of the entirely needy. The step was taken, with the approval of the governing body, in view of the urgent money situation, but it can only be regarded as a move to meet a special case. The solution of the financial problems of the voluntary hospitals does not lie in any direct payments by the patients, if only because those payments would be required of them at the moment when they would be least able to meet them.

Developments of institutional treatment are likely to be demanded and carried through which will be beyond the means of the voluntary hospitals as now constituted. The question will then arise, when legislation seeks to provide for such progressive changes as the nation may desire, whether the voluntary hospitals are to be absorbed into a new system, or whether they are to retain as far as possible their former position, characteristics, and functions. An equally important question for

those who desire to see them enjoying continued existence, with increased vitality and usefulness, will be whether voluntary charity will continue to support hospitals side by side with institutions doing similar work, but created and sustained out of public funds or by means of insurance, or by a combination of the two. We have to contemplate such institutions, and such insurance as we now refer to, as designed to include classes not yet found in our hospitals or subject to existing Insurance Acts, when the matter of the remuneration of the professional staff comes into the area of discussion. Will physicians and surgeons give their services as they now give them, rewarded by the knowledge that they are helping their fellow-men in need, and training their juniors; will they be content with such indirect advantages as are to be derived from their position and their hospital practice? In asking this we are assuming the possible existence of voluntarily supported hospitals contemporaneously with others open to a wider clientèle, founded and governed by the State, and presumably paying their staffs out of public funds. The whole position calls for much thought, and we trust that the Medical Consultative Committee of the Ministry of Health, in its imminent report, will deal with the issues in a practical, and especially in a far-seeing, manner.

The Story of Salvarsan.

TWO recent reports (Nos. 41 and 44) of the Medical Research Committee deal with the organic arsenical compounds. No. 41 is divided into two sections, the first being devoted to the ultimate results of the treatment of syphilis with these products, and the second to the toxic reactions which may follow the administration of one of them, Ehrlich's "914." The observations on which this report is based were made at the Royal Naval Hospital Haslar, under the direction of Dr. P. FILDES and Dr. R. J. G. PARNELL, R.N., who have put to good public use the remarkable facilities at their disposal for obtaining valuable data, and for observing the results of treatment. Their memorandum will be read with profit by all those engaged in venereal work for its estimate of the arsenical treatment of syphilis based upon direct clinical observation of results.

From the national point of view No. 44 is of special interest, being the product of the deliberation of a special committee appointed to consider the manufacture, biological testing, and clinical administration of salvarsan and of its substitutes. Before the war the manufacture of salvarsan was in the hands of a single German firm, which was under the obligation to submit batches of the drug for testing under EHRLICH'S direction at the Georg-Speyer Haus, Frankfort. After the outbreak of hostilities a sufficient supply of German salvarsan could no longer be counted upon, and arrangements were made for its production in England. Licences were issued by the Local Government Board to certain manufacturers suspending the patents protecting salvarsan and imposing a condition that every batch should be submitted to a biological test. The Medical Research Committee undertook to arrange for this testing as a war emergency, and it is on the experience gained during this testing of British and French products that much of this report is based. The story here unfolded reads like romance. The whole responsibility of testing these products was entrusted to one man, who laboured in the earlier months unaided, in inadequate premises, and with other work on his hands. There was but little information to go on, and knowledge could only be obtained by experience and careful observation. The supply of animals constituted an additional problem. Mice, which had been used at the Georg-Speyer Haus, were found to be in some ways unsuitable. As the arsenical preparations were to be used clinically as intravenous injections, it was felt that they should be tested biologically by the intravenous rather than by the hypodermic route, and to render this a practical proceeding rabbits were employed. It was then found that rabbits might in some instances show no signs of immediate poisoning, and yet give evidence of remote toxic effects, dying eventually of enteritis and renal necrosis. The proportion of British and French samples failing to pass this biological test grew at times so high as seriously to imperil the supply of material available for the country's need. Great discrimination was needed to steer a course between the perils of allowing toxic products to pass into use and of depriving the country of what it urgently required. That this was done, and done successfully, is due to the Medical Research Committee, and in particular to Dr. H. H. DALE who undertook this work in addition to his other labours. The achievement will be best understood by those who can appreciate the difficulty under which the work was done.

The testing of salvarsan and its substitutes has, however, a present as well as a past interest. The toxicity of these drugs is exceedingly high. They are also relatively costly. The temptation to dilute the toxicity of any sample by adding some inert and useless powder is considerable. Fraudulent substitutes without any arsenic and having no therapeutic value have already appeared in some countries. It is obvious that a strict control must be exercised over these preparations to prevent the advent of dangerous or useless samples. This control must be exercised by some Government Department, such as the Ministry of Health. Batches of salvarsan products will require to be submitted to biological testing, the tests being undertaken in a central Government laboratory or in laboratories provided by the various manufacturing firms, and approved of and inspected by Government. The Medical Research Committee is inclined to advocate the adoption of the second alternative, and to regard the scheme of decentralised testing as the more practicable. The onus of providing

adequate arrangements for testing would thus be thrown on the manufacturer, the holder of a licence being required to submit records of careful testing whenever required. In the matter of imported products the same care must be exercised, entry being refused to all foreign preparations that have not undergone similar testing. Much useful knowledge has been gained as the result of the emergency measures adopted during the war, and the task of safeguarding the public from toxic or fraudulent preparations will have been rendered considerably easier by the work that the Medical Research Committee has so efficiently carried out. The preparation of adequate machinery for discharging these duties in the future is a task of no small importance.

The Remuneration of Panel Practitioners: The Award.

TWO months ago the Insurance Acts Committee, acting on behalf of the medical profession, and in accordance with instructions received from the Conference of Local Medical and Panel Committees, accepted arbitration upon the capitation figure which should be paid to medical men working under the National Insurance Act. The circumstances are well known to all our readers, and are, moreover, set out clearly in our columns this week by Dr. H. B. BRACKENBURY, the Chairman of the Insurance Acts Committee, whose facts seem to us not open to challenge, and whose deductions are made with an evident spirit of fairness.

The arbitrators, Mr. W. F. GORE-BROWNE, Sir R. VASSAR-SMITH, and Dr. J. C. STAMP, under their terms of reference, issued on Friday, March 5th, the following award:—

> We, the undersigned, having taken upon us the reference to us by the Ministry of Health and the Insurance Acts Committee of the British Medical Association, namely, "to advise the Government what should be the amount of the capitation fee (per insured person per annum) on the basis of which the Central Practitioners Fund, under Article 19 (i.) of the Medical Benefit Regulations, 1920, should be calculated so as to afford fair remuneration for the time and services required to be given by general practitioners under the conditions set out in those regulations, in connexion with the medical attendance and treatment of insured persons," taking note of the agreement that "the capitation fee is not to include any payment in respect of the supply of drugs and appliances (such payments being met out of the Drug Fund under Article 22), nor any payments to meet those special conditions of practice in rural and semi-rural areas, which are covered by the payments to be made out of the Central Mileage Fund, under Article 19 (ii.),"
>
> And having heard and considered the statements of fact and arguments submitted to us,
>
> Do hereby award, determine and advise that the capitation fee per insured person per annum defined as above should be eleven shillings.

The award is in general accordance with expectation; it forms rather less than a middle term between the demand of the medical profession and the sum which the Government was prepared to find. There will certainly be some disappointment, but, having regard to the fact that the terms are later open to variation, there should certainly be no overt manifestation of reluctance to abide by the pledges which are entered upon in accordance with the findings of the arbitrators. We trust sincerely that the early work of the Ministry of Health will not be prejudiced by any bickering, which would present a damaging picture of the spirit in which the medical profession as a whole is willing to undertake national work. The statement in the House of Commons by the Minister of Health that the award has been received on both sides with the utmost goodwill is reassuring.

To the last paragraph of Dr. BRACKENBURY'S article we draw attention, particularly in view of his insistence upon the temporary nature of the settlement arrived at. Anticipating an early reopening of the remuneration question, as well as an unsympathetic reception of the medical views to be then expressed, he urges that the profession should place itself in a much stronger position with regard to unity of action and a defence fund. This is a sentiment which fully accords with the programme of the Federation of Medical and Allied Societies, which, given the necessary backing, should form a valuable link in negotiations between the State and the medical profession. It seems to us imperative in the best interests of medicine, and therefore of the public, that no idea should get abroad that medical men are working only for their own hand; and it might help the Government substantially to be supplied with the arguments, from a public point of view, why professional demands should be met in a more generous way than Dr. BRACKENBURY would seem to count upon. If the British Medical Association were to help the Federation to fulfil quickly what it has already made a good start upon, it would be surrendering, as far as we can see, nothing in influence or dignity, while coming into wider yet closer relations with those whom all medicine serves.

Health Insurance Records.

THE Minister of Health and the Scottish Board of Health have appointed an Inter-departmental Committee to consider and advise them as to the form of medical record to be prescribed under the conditions of service for medical practitioners contained in the new Medical Benefit Regulations, having due regard to the clinical as well as administrative and statistical purposes which such records will serve. The Committee, whose personnel is set out elsewhere, will be presided over by Sir HUMPHRY ROLLESTON, and includes Mr. R. W. HARRIS, assistant secretary of the Ministry of Health; the Superintendents of Statistics at the General Register and the Edinburgh Register Offices; the Director of Statistics of the Medical Research Committee; the Chairman of the Insurance Acts Committee; and the Director of Medical Services at the Ministry of Pensions. Dr. G. F. MCCLEARY and Mr. A. E. JOLL will act as joint secretaries.

Annotations.

"Ne quid nimis."

UNIVERSITY OF LONDON O.T.C. MEMORIAL FUND.

AN appeal is being issued by a strong committee for funds to establish a war memorial for the University of London Officers' Training Corps. Major B. M. Cloutman and Brevet Major A. C. T. White, the honorary secretaries, are the two survivors of the five former members of the contingent who gained the V.C. during the war, the other three being Captain John Fox-Russell, R.A.M.C., Major Frederick Henry Johnson, R.E., and Captain Allastair Malcolm Cluny McReady-Diarmid, Middlesex Regiment. A standing camp for the contingent has been acquired at Great Kimble, Bucks, and the suggestion is to perpetuate the memory of former members killed in the war by the erection of a permanent hall on this site, as well as by a memorial in London. The nature of this memorial is not yet settled, but presumably it will take the form of a tablet in some suitable place, so that most of the money subscribed can be allocated to the proposed hall. The number of past and present officers and cadets of the University of London O.T.C. who served as officers in the war is 4197, and of these 657 are known to have fallen. They served on every front, and assisted in the defence of London, one of them bringing down a Zeppelin near the City and later a Gotha aeroplane. They gained in all 1650 distinctions. It is proposed to dedicate a personal memorial to Lieutenant-Colonel Arthur Egerton, Coldstream Guards, first Adjutant of the University of London O.T.C., who fell in action near Loos, and proposals for other special memorials at the standing camp to individuals or groups will be sympathetically considered. It is hoped to raise £30,000 for the whole scheme. Contributions to the fund should be remitted to the honorary treasurer at 46, Russell-square, London, W.C. 1.

MODIFIED ENTERIC IN INOCULATED PERSONS.

IT is now generally agreed that enteric fever occurring in a patient who has been inoculated against the disease is altogether of a milder order than the same disease in an uninoculated person. This fact was constantly observed by R.A.M.C. officers who had the opportunity of studying cases of enteric among the unprotected civilian population of France and among our protected troops. The disease may be so mild indeed as to lead experienced clinicians astray. The difficulty of diagnosing typhoid and paratyphoid infections, among the very large numbers of cases of pyrexia of doubtful origin, was therefore constantly present and exercised the wits of clinician and bacteriologist alike. In the end bacteriological diagnosis was the final court of appeal. Where either a typhoid or paratyphoid bacillus could be isolated from the blood or from the stools, there was, of course, no hesitation in classing a case as enteric, however mild the symptoms may have been. But the exigencies of military service often prevented the prolonged observation of a patient in the early period of his disease, and bacteriologists were consequently unable in a large number of cases to give a definite opinion as to the nature of the disease. It was in such cases as these that the diagnosis of enteric by fluctuations in the agglutinating power of the serum was most practised. The reliability of the method, which we owe to Professor G. Dreyer and his co-workers, has been, and still is, keenly debated. Those who accept the method without reservation are led by their results to believe that a considerable proportion of cases of P.U.O. were in reality cases of modified enteric; and they are further compelled to conclude that prophylactic inoculation not only reduces the incidence of the disease and moderates its severity, but that it also diminishes the chances of recovering the infecting organism from the blood or fæces or urine. The debate on this important subject is not yet ended, but an informing contribution to the discussion has been made in a Green Book just published by the Medical Research Committee.[1] In this essay Drs. W. W. C. Topley, S. G. Platts, and C. G. Imrie review the whole question in an impartial way. They have investigated in an experimental fashion the basis of Professor Dreyer's method, which they conclude is trustworthy and enables "successive determinations of the agglutination titre of the serum to be carried out with the requisite degree of accuracy." They discard, however, the method of recording the agglutinin in terms of "agglutinin units," a reservation of considerable importance. By means of the Dreyer technique Dr. Topley and his collaborators have studied atypical febrile conditions, and have arrived at the conclusion that some 5 to 7 per cent. of the cases of P.U.O. from the Western front were enteric of one sort or another. In giving this result the authors frankly recognise that its validity depends entirely upon serological evidence, and "must stand or fall by the reliability of this method of diagnosis." They admit fully the importance of the criticisms and conclusions of the American Trench Fever Commission, which subjected the method to a thorough and searching test and finally declared that fluctuations of agglutinin titre are of no diagnostic significance. But upon the balance of evidence they are inclined to believe that their own conclusions are valid.

A CONTRIBUTION TO THE CHEMISTRY OF VITAMINES.

AN interesting paper on "The Preparation of a Stable Vitamine Product and its Value in Nutrition," read before the Division of Biological Chemistry at the Fall meeting of the American Chemical Society, Philadelphia, appears in the February number of the *American Journal of the Medical Sciences*. The authors, H. E. Dubin, Ph.D., and M. J. Lewi, M.D., prepared a vitamine product "V" from corn, autolysed yeast, and orange-juice materials which assured the presence of all three vitamines—antineuritic, antirachitic, and antiscorbutic. The combined materials or extracts were dried in vacuo at 40° C., a temperature which leaves the accessory factors unimpaired. A tentative analysis of the product obtained showed the following chief constituents: Calcium (CaO), 10 per cent.; phosphorus, 15 per cent.; nitrogen, 3·5 per cent.; fat, 2·5 per cent.; iron, 0·3 per cent.; silicates, 5·6 per cent.; moisture, 10 per cent., the remainder being made up of the rest of the phytin molecule—of which, according to these authors, the vitamine preparation is chiefly constituted—which is a double calcium and magnesium salt

[1] Medical Research Committee: Special Report Series, No. 48. A Report on the Probable Proportion of Enteric Infections among Undiagnosed Febrile Cases Invalided from the Western Front since October, 1916, by Drs. W. W. C. Topley, S. G. Platts, and C. G. Imrie.

of inosite pentaphosphoric acid. The results of the experiments with normal and polyneuritic pigeons, normal and scorbutic guinea-pigs, and, more important still, with children presenting evidence of malnutrition, marasmus, and rickets, showed a marked acceleration in the rate of growth, particularly in the case of children. It seems established that all three vitamines were present in the preparation, and the authors attach importance to the calcium and phosphorus in the product, which they regard as having a beneficial action on the general metabolism, more particularly on bone and tooth formation. They assert that until such time as the vitamines shall have been isolated, and their chemical composition determined, the vitamine preparation which they have produced may be trusted to be effective as an accessory food factor. The investigation is being continued with the hope of isolating and determining the chemical composition of the vitamines. The chemist so far has found these entities elusive, but their importance should stimulate the hunt.

SUPRAPUBIC HÆMATOMA OF THE RECTUS MUSCLE.

IN the *Progrès Médical* of Jan. 18th, Dr. F. Cathelin has described an interesting injury which comes under the observation of French army surgeons—suprapubic hæmatoma of the rectus muscle in young horsemen. It is always produced in the same manner, but the diagnosis would be very difficult for a clinician whose attention had not been directed to the injury by a previous case. While director of the Urological Centre for the Fifth Region during the war, Dr. Cathelin had eight cases sent to him in a few months. The following are examples:—

A young cavalryman, while mounting his horse from the left side, felt a slight suprapubic pain which did not prevent him from continuing on duty on that and the following days. The pain reappeared on mounting, but did not continue when in the saddle. A hard, smooth, regular, painless swelling was found in the subumbilical half of the right rectus muscle. The swelling ceased sharply two fingers' breadth below the umbilicus, and at the lower end was lost in the pubic bone. The left rectus showed nothing abnormal. Recovery took place in a fortnight under rest in bed and hot fomentations. In another case a man felt a violent pain in the lower abdomen on mounting. He was able to continue a riding lesson, but suffered much during trotting and jumping. On the following day he was able to mount without pain, but in the evening, on vaulting, he felt a violent pain, which immobilised him. He maintained a stooping posture and could not straighten himself. On examination acute pain was felt on palpation and on the slightest movement at the external border of the left rectus muscle, extending from the pubic bone to five fingers' breadth below the umbilicus. On palpation puffiness and a hard and painful swelling of the size of a small orange was felt beneath the muscle. The swelling disappeared under the same treatment and in the same time as in the previous case.

In all the cases the ætiology was the same. The patients were young soldiers of the classes 16 and 17 in the first months of cavalry training. In jumping or vaulting they felt, on widely separating the legs, a slight pain in the lower abdomen, which sometimes prevented them from continuing the exercises. Usually there was no pain on palpation. The swelling was sometimes circumscribed, at other times diffuse, smooth, regular, and always unilateral. Its position beneath the muscle gave a sensation of depth. It was always at the lower part of the rectus, generally on the left side. In spite of its suprapubic position vesical signs were always absent. The pathogenesis is explained by the fact that the aponeurosis surrounding the recti is absent posteriorly over the lower third where there is only a thin cellular layer, between which and the muscle run the epigastric vessels. The production of the hæmatoma has been attributed to several mechanisms: 1. Repeated impact of the abdominal wall against the pommel of the saddle in jumping on a horse without stirrups, which produces small muscular ruptures, the origin of a more important rupture during horse exercise. 2. Muscular rupture, such as occurs in sprain of the back or rupture of the tendo Achillis. Against this view is the almost complete absence of pain. 3. A tearing away of bone from the pubis at the attachment of the rectus. Again the absence of pain is against this view; so is the absence of ecchymosis. 4. The most probable hypothesis seems to be rupture of branches of the epigastric artery. It is well known how easily these branches are ruptured when the muscular fibres are separated to enlarge the incision for lateral laparotomy.

A NAVAL OFFICER ON CONDITIONS IN MERCHANT SHIPS.

EFFORTS were being made for some time before the war to improve living conditions for the crews of merchant ships. The Board of Trade was interested, its medical officers certainly were, and it was believed that ship-owners were to some extent conscious that their crews, including the stokers who fed the furnaces, wanted, and were entitled to, something better in the way of sanitation, including sleeping and feeding accommodation, than had been given them in the past. If anyone desires to see how the living accommodation for the firemen of a good-sized liner, in use as such in 1914, appeared to the eyes and other senses of an experienced officer in H.M. navy he will find full particulars in the closing chapter of a series of interesting articles in *Blackwood's Magazine* for February, 1920. The writer, Rear Admiral Boyle Somerville, describes the work of the Ninth Cruiser Squadron, with particular reference to a liner converted into a cruiser. What that work was, so far as the war was concerned, can be read in the articles referred to. With regard to the matter of the ship's equipment, as studied by the writer in connexion with the process of conversion, Admiral Somerville found much to disapprove of, but the "first and worst and rudest shock of all" came when he went the rounds of the living quarters allotted to the deck-hands and firemen of the ship's original crew in the routine of the first Sunday morning at sea. The quarters of a man-of-war's crew, as he observes, are not laid out in over-luxurious fashion. What he found in the way of darkness, lack of ventilation and sanitation, filth, and vermin in the forecastle and the depths beneath it in his new command is told with breezy candour and with full particulars of the remedial steps immediately taken, including the washing out and sealing of the part of the ship previously used for sleeping in, and the throwing overboard of the abominations provided for bedding. After that decks, dismantled of the woodwork compartments which once had been cabins, but still equipped with baths, became the crew's living laces. The effect of what was done

in producing contented and orderly service, as well as the results of training under efficient stokers in the saving of coal, might usefully be considered by ship-owners and legislators interested in our seamen. Admiral Somerville's point, put shortly, is that training and decent treatment for firemen would pay for any immediate outlay involved, and that those who give conditions which only the dregs of the male population will accept only get that class to serve in their ships, to their own loss as well as to their discredit.

DENTAL CHANCRE.

OWING to the rarity nowadays of syphilitic infection arising from the use of unsterilised dental instruments, a case reported by Dr. Herman Goodman,[1] of New York, is of interest. The patient was an American officer, 32 years of age, who was married and had two healthy children. Ten to 14 days after extraction of a tooth by a civilian dentist an ulcer appeared at the site of the extraction. A Wassermann reaction taken at the time proved negative. The ulcer healed under local treatment, but recurred. About six weeks later there was a generalisation of the syphilitic infection, which was shown by inflammation of the jaws and ulceration about the right molars, bilateral swelling of the submaxillary glands, pharyngitis, and a positive Wassermann reaction. There were no lesions on the genitals. After three doses of arsenobenzol the symptoms disappeared and the Wassermann reaction became negative.

THE GENESIS OF THE MAUDSLEY HOSPITAL.

THE institution by the London County Council of a course of lectures and practical instruction at the Maudsley Neurological Hospital, in preparation for the Cambridge Diploma of Psychological Medicine, leads us to recall the initial impetus given to the scheme by Sir Frederick Mott. In the *Archives of Neurology* for 1907, writing of post-graduate teaching in medico-psychology and neuro-pathology, he said:—

> A fruitful field of study in psychiatry would be those early cases of uncertifiable mental affection termed neurasthenia, psychasthenia, obsession, mild impulsive mania, melancholia, hysteria, and hypochondria, which in many instances are really the prodromal stages of a pronounced and permanent mental disorder. The poorer patients suffering with these conditions first come into the hands of the practitioner, the dispensary or infirmary doctor, and the out-patient physician at the general or special hospitals. The better class patients are sent by the practitioner to the neurologist; the generality of the poorer patients, and sometimes the better class patients, are regarded by the medical man who has had no training in psychology as of little medical interest (for such patients do not, as a rule, benefit by drugs), and he finds it a wearisome task to listen to their story, to ascertain their inborn tendencies, and to find out the truth of what has happened to account for their strange conduct indicative of their not feeling, thinking, and acting in accordance with the general usages of their social surroundings, and yet such patient may not be so anti-social as to be certifiable. Such cases are often in the hopeful and curable stage, and these, if studied carefully by trained medico-psychologists, could not fail to yield valuable results in regard to our knowledge of the causation, prevention, and cure of insanity. Moreover, when the cases are followed up systematically they would throw much light on prognosis in similar cases. The majority of cases which are admitted to the asylum have long passed the hopeful stage; still, there are a certain number of early curable cases, and these, I maintain, would sometimes be much better if they had not been certified or sent to associate with chronic lunatics. Fortunate would be the community in which there was a fully equipped and well-organised psychiatrical clinic, under the control of a university, and dedicated to the solution of such problems.
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> The scheme of the London County Council for Receiving Houses would probably include the establishment of an acute hospital for the investigation and treatment of curable mental cases, to which a clinic might with advantage be attached. Hereby post-graduate teaching would be encouraged, and the better knowledge and early treatment of insanity would certainly prove of great economic advantage. If suitable post-graduate training in medico-psychology and neuro-pathology were established, doubtless the universities and licensing bodies might be induced to establish a diploma, very much on the lines of the Diploma of Public Health, which has largely contributed to raise the science of public health to the high position it now holds, thus conferring an inestimable benefit on the nation.

The offer by Dr. Henry Maudsley of £30.000 to further precisely these aims was made to the Council on Feb. 18th, 1908, and there is no reason to doubt that Sir Frederick Mott's statement largely induced Dr. Maudsley to make his munificent offer.

POST-ANÆSTHETIC TOXÆMIA.

A RECENT inquest has directed attention once again to the obscure condition known as post-anæsthetic toxæmia, or, as it has been less precisely termed, "delayed chloroform poisoning." Chloroform is, we know, not the only, although it is the most usual, anæsthetic associated with these cases of persistent vomiting, restlessness, delirium, coma, and death. It was in the columns of THE LANCET in 1894 that the late Dr. Leonard Guthrie first directed attention in this country to a condition which had already been described on one or two occasions on the continent. Dr. Guthrie's description remains the best clinical picture of the symptoms exhibited by patients who suffer from post-anæsthetic toxæmia, nor has much knowledge been added to that which he gave us upon the post-mortem appearances in these cases. The association of acidosis with this condition had, however, not yet been recognised, and treatment, therefore, had not yet been designed, as it now has been, based upon the assumption that the symptoms are due to the faulty products of metabolism present in an organism that is suffering from acetonæmia or the state immediately precedent to this. Whether this supposition is correct or not, the use of glucose prior to operation, and bicarbonate if symptoms develop after, seems to have good clinical justification. The feature about this condition, which makes any explanation of it dependent upon the anæsthetic so difficult of comprehension, is the fact that in many instances the anæsthetic has been of extremely short duration, and in some the drug employed has been one of far less toxic power than chloroform. In the case recently recorded the operation lasted only a quarter of an hour, and was one that involved no hæmorrhage at all, being a manipulative procedure. Yet the post-mortem appearances were well marked and included the characteristic fatty infiltration of the liver described by Dr. Guthrie. It was the presence of this condition in patients who had succumbed within a day or two of operation that led Dr. Guthrie to suppose that a pre-existing faulty state of the liver

[1] New York Medical Journal, Jan. 31st, 1920.

must be present. The histological changes were, he thought, too extensive and advanced to have been produced within the short time intervening between anæsthesia and death unless they had already begun beforehand. The importance of discovering in the urine of patients before operation the presence of alkaloidal bodies is that these indicate faulty liver metabolism. Thus more recent investigations link up with Dr. Guthrie's original hypothesis of pre-existing liver disturbance in patients who become the subjects of post-anæsthetic toxæmia.

HEALTH OF THE U.S. ARMY IN 1918.

In a recent number of the *Military Surgeon* Major Soper deals with the sickness occurring in the U.S. army during 1918, based upon the weekly reports from stations to the central office. The figures are obviously not final, but their small inaccuracies are far more than compensated by the promptitude with which the broad lines of disease prevalence are made publicly available. During 1918 the army increased from 217,272 to 1,538,293 men, and as the recruits joined the cases of infectious diseases mounted up. All comparisons with previous years were upset by the influenza epidemic, which seems to have commenced in March in the south-east, to have progressed slightly during the summer, but to have taken on a virulent infectiousness only in autumn. Pneumonia caused most deaths (24,538), influenza is only discredited with 1133, but the most deadly disease was cerebro-spinal fever (883), 42 per cent. More days were lost from measles than from any other disease; next come gonorrhœa and mumps. Troop movements carried infections, and the respiratory infections spread more widely and were more fatal in barracks than in camps. The camps had much higher death-rates than the large cities of the United States. Recruits are susceptible to disease, especially when they first arrive and have not learned how to take care of themselves; but to the end of their training, when they are doing more and more work, they are very likely to get worn out. The Americans in France suffered fewer attacks of illness than those at home, and were less apt to die, but in France bronchitis, influenza, mumps, scarlet fever, and dysentery were more prevalent and fatal than in the United States. Influenza in the United States attacked 57·72 per 1000, and 0·01 died, but in France the figures were 101·16 and 0·04. Colonel Lynch and Lieutenant-Colonel J. G. Cumming insist that mess gear of troops shall be boiled after each meal to prevent the conveyance of infection from mouth to mouth by cups and forks. Of 160,000 troops returning from France in 68 ships, 97,000 had their mess gear boiled, 62,000 only their mess gear washed in warm water. These last had more respiratory infectious disease, and, in particular, had three times as many cases of influenza and of pneumonia. (If spoon boiling is the secret of avoiding infection, why had the camps mentioned above less respiratory disease than the barracks where dish washing was probably better done?) Account is given of 500 cases of scarlet fever which occurred in a camp in Georgia. Here the important observations seem to be that in many cases the rash is transient and inconspicuous, perhaps even it may be absent, the disease slight, and attention only called to the condition when desquamation begins. On the second day there develops a polymorphonuclear hyperleucocytosis and a general enlargement of the glands. So that if a suspicious case has on the second day a bilateral enlargement of the inguinal glands it should be diagnosed as scarlet fever. On the third day a characteristic eosinophilia (2 to 5 per cent.) begins to develop and the more marked as the case is more serious. In respect of diphtheria in the American Expeditionary Force, the most effective measure of prevention was the immunising of susceptible men, but the disease gave endless work to the central and divisional laboratories.

GAS CYSTS OF THE INTESTINE.

ACCORDING to Dr. M. D. Stoyanovitch,[1] who devotes his thesis to the subject, this rare condition was first described by Duvernoy in 1754, and since then only about 50 cases have been recorded. The cysts, which vary in size from that of a grape-seed to a grain of wheat, are found massed together like a bunch of grapes. Their favourite situation is the small intestine, but they have been found on the parietal and diaphragmatic peritoneum, the meso-colon, omentum, and intestinal adhesions. Histologically they are situated in the submucous and subserous coats, and exceptionally in the muscular wall of the intestine. They are grouped round the lymphatics, and are remarkable for their vascularity. The condition, which has been found between the ages of 13 and 67, may occur by itself, but, as a rule, is associated with another disease, such as stenosis of the pylorus due to gastric ulcer, tuberculous peritonitis, or appendicitis. The symptoms are vague, and the cysts are often found unexpectedly at an operation undertaken to relieve the concomitant affection. The physical signs are distension of the abdomen or resistance in the epigastric region, with gastric splashing or a tympanitic note. Valuable information is obtained by radioscopy, which shows the presence of clear zones. The complications which may occur are pyloric or intestinal obstruction. Various theories have been advanced to explain the formation of the cysts. The mechanical theory that they are due to the passage of the intestinal gas into the subserous tissue is contradicted by the nature of the gas, which resembles that of atmospheric air, and by the localisation of the cysts in other situations than the intestine. The theory that they are tumours formed at the expense of the lymphatics fails to explain the presence of gas. The microbial theory, which appears to be the most probable, is supported by Dupraz, who isolated a liquefying coccus which on injection into a bitch reproduced the cysts in the vagina. As regards treatment, if the cysts are merely discovered in the course of an operation for some other abdominal affection they need not be removed. If they give rise to pyloric obstruction, gastro-entero-anastomosis will be required. In the case of intestinal compression, or obstruction of the lumen by the cysts, entero-anastomosis or resection of the affected loop should be performed.

MATERNAL AND CHILD WELFARE UNDER THE LATE LOCAL GOVERNMENT BOARD.

Section 12 of the Medical Supplement to the 48th (and last) annual report of the Local Government Board is from the pen of Dr. S. W. Wheaton, and deals with maternal and child welfare during 1918–19. Although of great interest as a record, it reads like ancient history in view of the rapid progress since achieved in the face of difficulties.

[1] Thèses de Paris, 1918-19, No. 230.

The supplement states that on the cessation of war conditions it was hoped that a large army of workers would be set free to resume their efforts for the reduction of maternal and child mortality; but, unfortunately, the prevalence of influenza interfered with this work. The health visitors, nurses, and other workers who were not retained by the needs of the navy and army were to a large extent employed in the visiting and nursing of sufferers from influenza, with the result that the maternity and infant welfare centres over large areas had to be closed for a time, while maternity homes and other institutions were gravely affected by the incidence of the epidemic on the staffs and inmates. At the same time, the existence of a trained welfare staff provided local authorities with a reliable force, which must have been of the first importance in reducing mortality from influenza. The further use of this staff in case of epidemics of measles, whooping-cough, or diarrhœa and enteritis is an obvious corollary of its success in influenza. The absence of rise of infant mortality in the year 1918, in spite of the adverse conditions of war and influenza, while a matter for congratulation, is attributed by Dr. Wheaton to the presence of climatic conditions favourable to infant life, the mortality being low in regard to the infectious diseases especially dangerous to infant life. The year was a mild and wet one, the winter months being unusually warm and the summer months correspondingly cool; rainfall was heavy, 4½ in. above the average, and unusually plentiful in the months of highest temperature. Various philanthropic agencies and welfare organisations have claimed the share in the reduction of infantile mortality in 1918 which the report ascribes to the gentle influence of the elements, and we can only trust that their continued activity may show favourable figures under more rigorous conditions. The opportunity is there, for, according to the directory,[1] which has just reached us, there are now 1718 maternity and child welfare centres in England and Wales, of which 331 are conducted by county councils, 708 by local sanitary authorities, and 679 by voluntary societies. In London nearly 80 per cent. of the centres are still under voluntary direction.

SLEEPING SICKNESSES.

IN 1734 John Atkins described, under the term "sleeping distemper," a disease which he found to be common among the natives of the "coast of Guiney," and, although it was not until 1903 that the work of Castellani, Bruce, and others linked up the disease with a particular stinging fly and a characteristic blood parasite, the term "sleeping sickness" has been in general use for nigh on two centuries to denote this form of negro lethargy. Since 1903 "sleeping sickness" has become synonymous in medical literature with trypanosomiasis, and Castellani and Chalmers head the relevant chapter, in the recent edition of their Manual of Tropical Medicine "sleeping sicknesses." A similar nomenclature is in use the world over; we need only mention (Fr.) maladie du sommeil, (Ital.) malattia del sonno, (Ger.) Schlafkrankheit, (Port.) doença de sômno. It would, therefore, be very inconvenient and lead to needless confusion if the same term is used for quite another malady, as there is a tendency to do in the daily press at the moment. The little epidemic of encephalitis occurring in England during the spring of 1918 was unfortunately labelled "botulism" for a while and a gamut of other terms, such as toxic ophthalmoplegia and Heine-Medin disease, was employed until at the combined sections of the Royal Society of Medicine in November, 1918, it was agreed to follow von Economo in the use of the word "encephalitis lethargica." It was at this discussion that Professor A. J. Hall suggested that "sleeping sickness" would not be an inappropriate name for the epidemic, and the lay press has taken his view and acted upon it. It remains for those who are concerned for an informed and accurate public opinion on health matters to devise some popular term for encephalitis lethargica less cumbrous than "lethargic encephalitis" and free from the objection to "sleeping sickness." The disease is too new to appear at all in the official Nomenclature of Diseases (5th edition, 1918), which gives no help in the matter. It might be well to revive "nona," which was the term used to describe a similar outbreak of febrile illness with somnolence in Italy, Bavaria, and Russia, in the year 1890. The word has the merit of never having been used to describe anything else and of not committing the user to any theory of causation, the actual agent of the disease being still as uncertain as the derivation of the word.

[1] Maternity and Child Welfare Centres in England and Wales, Jan. 1st, 1920. M. & C. W. 9. H.M. Stationery Office. Price 1s.

THE SALARIES OF ASSISTANT MEDICAL OFFICERS.

THE recommendations made at different times by the British Medical Association with regard to the salaries of medical men employed by Health Authorities have contained, with their excellent intentions, more than one anomaly. This has embarrassed alike Authorities in offering conditions of remuneration, candidates in applying for vacancies, and medical journals in accepting advertisements. In respect to the last, we have decided not to accept advertisements in these columns for the future where the pay offered for assistant medical officers is less than £500 per annum or its equivalent.

Sir George Makins has succeeded the late Sir William Osler as President of the Fellowship of Medicine.

"IN 1917 for every 10,000 births 48 mothers died" is the form in which the statement should have been put in our leading article of Feb. 28th entitled "Safety and Comfort in Child-Bed," as several correspondents write to point out. We regret the obvious slip.

THE fifth congress of the Société Internationale de Chirurgie, of which the general secretary is Mr. L. Mayer, rue de la loi 72, Bruxelles, will be held in Paris from July 19th to 23rd, to be followed by a week's tour of the French and Belgian battlefields. Members are asked to inform the secretary as soon as possible whether they intend to be present. A detailed programme of the congress, from which representatives of Central Europe are to be excluded, will be issued shortly. A provisional list of subjects includes surgery of the cardio-vascular system, destructive radiology, surgical hæmatology, fractures of the femur, and the prophylactic and curative treatment of tetanus.

SOME THOUGHTS ON THE ARBITRATION.

By H. B. BRACKENBURY, M.R.C.S.,
CHAIRMAN OF THE INSURANCE ACTS COMMITTEE.

[WHEN the Insurance Acts Committee, on behalf of the profession and in pursuance of the instructions of the Conference of Local Medical and Panel Committees, suggested arbitration with regard to the capitation fee for insurance practitioners, an undertaking was of course given on both sides that the award of the arbitrators would be loyally accepted. The Government is now pledged to use every effort to get the House of Commons to pass Estimates which will provide the money required; the Committee is pledged not to promote any organised effort to refuse service; and insurance practitioners are pledged to do their work honestly under the conditions of the award. These pledges are, however, not unlimited as to duration; it is understood that after the year 1920 a notice of not less than three months may be given to vary the terms and conditions of service, to alter the basis of remuneration, or to repudiate service altogether by organised effort.

Moreover, a loyal adherence to the terms of the award on this understanding does not mean that the award is accepted as being either just or satisfactory. To those who know the course of events when the Government was considering its reply to the demand of the profession for a capitation fee of 13*s.* 6*d.*, and the pressure from various quarters which was then being brought to bear on the Ministry of Health to resist any payment of more than 9*s.* or 10*s.* as an extreme limit, the extraction of the offer of 11*s.* from the Government appears something of an achievement. To have accepted this offer, however, at that stage might reasonably have been held to be an admission of its fairness and adequacy. To submit to the same basis of remuneration now at the hands of the arbitrators involves no such admission; it leaves the profession free to maintain its opinion that under present conditions no capitation fee of less than 13*s.* 6*d.*—or from that sum up to about 15*s.*—is fair or adequate for the kind of service which it had in contemplation, and free to take at the proper time any legitimate action that it thinks fit to carry that opinion into practical effect. Personally I am prepared to maintain this standpoint as strongly as ever.

A Missed Opportunity.

To many of us the main disappointment in the matter is that the Government has missed a magnificent opportunity—one which is not likely to recur, at any rate in so favourable a form. At the present stage of national health developments the fundamental necessity has appeared to us to be the definition, the establishment, the encouragement of a "general practitioner service", (not with reference to the Insurance Acts only) of the best type, and with the widest outlook as regards its responsibilities towards both the individual and the community. In the case which the Insurance Acts Committee submitted to the arbitrators the outline of such a service is made quite clear, and the provision of such a service is offered. In the observations made on behalf of the Government—both printed and verbal—presented to the arbitrators, though some pen-service and lip-service is paid to the idea, there is a repudiation of this as a practical thing, and a belittlement of what is at present required or immediately contemplated. It has been understood by those representing the profession throughout all these discussions that the main object of the revision was to improve the present service and to provide one of a comprehensive kind which would expand and fit in with additional medical and accessory services. Yet we find the Government saying that "the number of doctors willing to undertake service on the terms offered was ample to provide a sufficient service in every part of the country, and that service has remained adequate, in respect of numbers, throughout." It is notorious that there are areas in which the inadequate number of doctors is the chief cause of some serious deficiencies in the kind of service rendered, yet the Government is satisfied with this. Again it is said "the number of doctors necessary is so large that it would be impossible to confine choice to the best," and "a relatively high rate of remuneration will not alter the professional capacity." Obviously, however, the capacity *of the service* is materially altered according to the number of individuals of higher or lower professional capacity who are attracted to it or retained in it, yet the Government appeals for an award of such remuneration only as will ignore this. Again, the Government states that the profession's estimate is based on "an ideal standard of service," that a "high ideal type" is "visionary," that it cannot afford to pay for "potentialities of service that are not likely to become realities within the immediate future," that "considerations advanced as regards public health and research are not relevant," that "no obligation arises under the regulations" with regard to some professional work and responsibilities and, "there being no obligation," there can arise no question of remuneration in respect thereof. All this was not to be expected of the Ministry of Health or even of an intelligent Treasury; and it is profoundly disappointing to discover that at a time when a new era of health administration is supposed to be beginning, and when within the profession there is a spirit of eagerness to offer every service that can properly be asked from them, the Government should base its case on a repudiation of the conception put forward on the part of the profession, and should ask for an award on the assumption that these services are not required, or should not be encouraged, or would not be forthcoming. We must accept the lower level of service as what it is now proposed to pay for; we shall no doubt give good and honest value on that level; but once more it is proved that the profession is willing to give practical effect to ideals far in advance of those held by politicians and administrators—even those who are specifically charged with the care of the public health.

On such a level as that indicated it is possible to hold that a capitation fee of 11*s.* affords a fair basis for a minimum remuneration. The Insurance Acts Committee maintains that even on this level it is not enough. The reference to the arbitrators was so framed that they could discharge it by the mere mention of a figure as their award. This is what they have done, and it is therefore impossible to be sure how this figure was arrived at. To those of us, however, who through nearly eight hours were trying to follow the minds of the arbitrators, it seems not improbable that the final stage of the conclusion was something like this: "We will assume that 2*s.* 6*d.* out of any capitation fee is required for expenses. We will assume that a general practitioner can properly attend to 3000 persons (not necessarily insured persons) in a 2400 hour-year. A net fee of 8*s.* 6*d.* will therefore produce an income at the rate of £1275 net. This is approximately what both sides have said is not unreasonable for a general practitioner as such, working his ordinary full time." This is a supposition, but, in fact, the result may correctly be stated in that way.

What the Negotiators have Accomplished.

Those who have conducted the negotiations on behalf of the profession have therefore accomplished this—that, on the new basis of remuneration, a practitioner who claims that he is able properly to attend to 3000 persons in all will be paid in respect of those who are insured persons at the rate of £1275 a year net, while he will be at liberty to cultivate any professional work of a more special character and to charge fees therefor at a higher rate, or to attend, if he can, a larger number of patients by working longer hours than those regarded as the normal. This is a very definite improvement on the existing state of affairs; to some members of the profession, and doubtless to many outside it, such remuneration will not appear unfair or inadequate for the kind of service postulated. If the profession determine—as I think it should—that this remuneration is still inadequate, it ought to show either: (*a*) that £1275 per annum is less than the proper value of a good general practitioner, or (*b*) that a higher sum

than 2*s*. 6*d*. per person can properly be allocated to professional expenses, or (*c*) that the circumstances of the case or the capacity of a general practitioner do not permit of as many as 3000 individuals, *on the average*, being properly cared for, or (*d*) that the conception of a "general practitioner service" ought to be so enlarged as to necessitate a smaller number of persons being under the care of each practitioner without reduction of total income. Personally, I am prepared to maintain that every one of these propositions is true, and I fancy that nearly all practitioners will agree with this, with these exceptions—that some members of the profession who are not general practitioners may dispute the first, and that many general practitioners are still apt to deceive themselves about the third. We still need some clear thinking on this point, and I propose to conduct an inquiry as to the number of persons for whose health the State may properly require a general practitioner of ordinary competence and skill to be responsible, and I hope to put the result of such inquiry before the profession for discussion. In any case, it is clear that, in order to secure a further revision of remuneration in the early future, it will be necessary on all the above points to obtain a large amount of statistical information from practitioners. The absence of this was our chief weakness before the arbitrators, and this lack was not the fault of the Insurance Acts Committee or its officers, who have appealed over and over again to the profession to produce such statistics. May we appeal once more, now that the need is demonstrated, for the immediate and careful keeping of the records and figures needed?

Support of the Profession Required.

Experience teaches one thing more. If we are at the earliest possible time once more to raise the question, and to show once more, as we think, the complete reasonableness of our demands, should these demands once more be rejected by a short-sighted administration, the profession must be in a much stronger position with regard to unity of action and with regard to a Defence Fund than is now the case if action is to be effective. The present result is in many respects good; we had a right to expect it to be better. The machinery for negotiation has not proved to be at fault. The personnel is, at any rate, representative and very hard-working. But we shall never arrive at the full results we want to accomplish without the entire support, both moral and financial, of the whole profession.

VENEREAL RESEARCH IN U.S.A.:
WORK OF THE SOCIAL HYGIENE BOARD.

IN a very exhaustive paper presented to the American Association for the Advancement of Science at St. Louis (Mo.) on Jan. 2nd Dr. William F. Snow and Dr. Thomas A. Storey deal broadly with the subject of Experimental Medicine and Venereal Diseases. The account is specially noteworthy for the epitome which is given of the scientific investigations now being carried on in America with the assistance of the United States Interdepartmental Social Hygiene Board. The summary is brought up to Jan. 1st, 1920, and is as follows:—

Cornell.—Dr. John C. Torrey is making a serological study of the gonococcus group in the Laboratory of Hygiene of the Cornell Medical School. This research is an investigation into the relationship of many strains of gonococcus from various sources to determine whether the group is homogeneous or heterogeneous. If the former is the case the research may establish a few groups of fixed types which will embrace the great majority of strains encountered in pathological conditions, as has been done for the pneumococcus and the meningococcus groups. Such a group would go a long way to establish the complement-fixation test for gonococcic infection on a more rational and satisfactory basis. If this research succeeds in establishing a standard antigen, we may not only expect that the complement-fixation mode of diagnosis will give more trustworthy results, but we shall have the basis for the preparation of a standard stock vaccine.

Harvard.—In the Pharmacological Laboratory at Harvard University investigation is being made by Dr. Reed Hunt relative to the toxicity of arsphenamine, neoarsphenamine, and analogous products.

Jefferson.—A search for a more rapid and specific method of demonstrating the *Treponema pallidum*, and for a simplification of the clinical diagnosis and treatment of syphilis, was carried out last summer by Dr. Randall C. Rosenberger and his assistants in the Laboratory of Hygiene and Bacteriology in the McFadden Laboratory of Research at the Jefferson Medical College. Results of these investigations should appear shortly.

Johns Hopkins.—Four groups of researches are being carried out in the Clinical, Pathological, Bacteriological, and Animal Experimental Laboratory of the Brady Urological Institute, Johns Hopkins University, under the direction of Dr. Hugh Young. With Dr. Young, Dr. E. C. White is working on the development of new synthetic drugs for the treatment of gonorrhœa. The drugs in present use in the treatment of acute gonorrhœa are, in the main, ineffective. There is great need of a more successful antiseptic. Clinical application of certain new drugs have given better results, and a promising new field for experimentation has been opened. This investigation is for the purpose of synthesising drugs which will possess qualities superior to those of the drugs in present use, and to test their comparative antiseptic values experimentally and clinically. Under Dr. D. M. Davis, working with Dr. Young, a research is being conducted for the manufacture and investigation of a series of new organic compounds for the treatment of syphilis. Salvarsan is now considered to have failed in producing radical cures of syphilis, and mercury is again being used to complete "cures." But great difficulties still exist in using mercury owing to the frequency of toxic results, especially on the kidneys. Some of the recent work in the Brady Urological Laboratory points to the possibility of employing new mercurial compounds which will be tolerated in larger quantities than the old. Dr. E. O. Swartz, in this same laboratory, is concerned with the manufacture and investigation of a series of penetrating organic dyes for the treatment of chancroids. The treatment of chancroids depends largely upon an attack against the infection in its localised area in the tissues, in which the specific bacilli of Ducrey are deeply buried. The drugs used at present are ineffective because of their lack of penetrability. By the use of organic dyes, to which antiseptic groups have been chemically bound, Dr. Young and Dr. Swartz are securing non-irritating and non-toxic drugs of deeper penetration and of much greater sterilising value than others now in use, thus effecting much more rapid cures. Finally, in this same laboratory, working with Dr. Young, Dr. William Jack is developing simpler technique and more effective and less expensive drugs for the treatment of venereal diseases. The venereal prophylaxis in present use depends upon drugs and apparatus available only in especially equipped stations and tedious in administration. The purpose of this investigation is to procure a preventive more easily applicable and less expensive. The relatively little progress in the perfection of venereal prophylaxis made since the discoveries of Metchnikoff and Roux, 1905, especially justifies an investigation concerned with the production of simpler and more effective methods.

Massachusetts.—An appropriation has been made to the Massachusetts State Psychiatric Institute for two investigations that are being carried out under the direction of Dr. E. B. Southard. The first of these researches is concerned with the changes effected in the central nervous system by the treatment of cases of neuro-syphilis. This investigation involves an elaborate and final study, by present methods, of the tissues, especially the nervous system, of subjects who have been treated for neuro-syphilis systematically and intensively. The Massachusetts State Psychiatric Institute possesses in its own laboratory about a hundred brains and spinal

cords of subjects of neuro-syphilis who have been intensively treated by various methods, intravenously by salvarsan, arsphenamine, mercury, and iodides, by spinal injections of various drugs, by intracranial and intraventricular injections, and by combination of these methods. This clinic is, perhaps, the most elaborate of the neuro-syphilitic clinics to be found anywhere in the world at the present time; the amount of autopsy material therein is unique and its quality very special on account of uniform methods of observation of material, and especially on account of the availability of all the spinal cords as well as the brains and other tissues of the cases. This material is supported by elaborate clinical histories and records which have been collected in a readily available way. The cases have been systematically and intensively treated. In addition to the hundred nervous systems of these systematically treated cases, there are several hundred other nervous systems, equally well preserved and associated with clinical records, in untreated and partially treated cases, both of the asylum group and of the psychopathic hospital group. In addition to this autopsy material, there is a large amount of cerebro-spinal fluid material derived from the systematic neuro-syphilis treatment investigation carried on under the Commission on Mental Diseases since 1914. The second investigation under Dr. Southard's direction is a research on the family of the syphilitic (Social and Economic Effects of Syphilis in Special Relation to the Family). The clinical material available in the Massachusetts State Psychiatric Institute is unique and permits the establishment of a model plan for reaching "syphilis of the innocent" from a hitherto socially concealed source. The established ward and out-patient services available to the Psychiatric Institute yield a large number of neuro-syphilitics (paretics, tabetics, and atypical forms) yearly. In this research Dr. Southard is dealing mainly with the handling of the syphilitic family for the prevention of further infection, and for the treatment of those already infected to prevent further syphilis. The social service problems involved are of extreme difficulty, and the technique is somewhat intricate, requiring rather expert scientific social workers. The information, resulting from this investigation will indicate the size of the problem, its cost to the community, and the best methods of handling the situation. The information so secured could be put into a form available to all social agencies, and particularly to those working in child-welfare agencies and hospitals. In the John McCormick Institute for Infectious Diseases Dr. R. D. Herrold, under the direction of Prof. L. Hektoen, is making an investigation for the establishment of a better and more definite standard of cure in the gonorrhœal infection of the male. These investigators are attempting to improve the so-called provocative test, as well as the methods now in use for the cultivation of the gonococcus, and to correlate the results of fixation and other serologic tests.

Michigan.—At the University of Michigan, Dr. A. S. Warthin is engaged in a three-year programme to perfect the method and shorten the time required for the staining of spirochætes in tissues. The success of Dr. Warthin's research will provide an accurate diagnosis of latent syphilis now seldom recognised. These researches are being carried out in the Pathological Laboratory of the University of Michigan. With Dr. Warthin is associated a staff of nine investigators and assistants engaged in this research.

Minnesota.—Three researches are being carried out in the University of Minnesota. One of these investigations, under Dr. W. P. Larson and Dr. J. F. McClendon, is being undertaken in the Laboratory of Bacteriology and Immunology and is concerned with a study of the permeability of bacterial membranes, particularly of the organisms of venereal diseases. The second investigation in the Laboratory of Experimental Medicine under Dr. L. G. Roundtree and Dr. Charles E. Nixon, is concerned with the chemical and physical properties of the cerebro-spinal fluid in the luetic and non-luetic. The third research, under Dr. A. D. Hirschfelder and Dr. H. G. Irvine in the Laboratory of Pharmacology, and in the Clinics of Dermatology and Syphilis, is concerned with an investigation of phenol-alcohol derivatives in relation to their antisepsis and the chemotherapy of the gonococcus and spirochæte. There is a reason to believe that the phenol group may combine a definite antiseptic power with low toxicity, and that higher derivatives may be synthesised in which these characteristics will be greatly enhanced.

Nebraska.—At the University of Nebraska College of Medicine, Dr. Edwin G. Davis and his associates are attempting to develop a new internal urinary antiseptic, and are investigating the value of certain aniline dyes in the treatment of gonorrhœa. These researches at Nebraska are very like those that are being carried out in the Brady Urological Laboratory at the Johns Hopkins Medical School. In the previous studies carried out by Dr. Davis it has been possible to establish a definite relationship between the chemical structure and renal excretion, and to predict with reasonable accuracy which drugs would be likely to be excreted. It has further been possible so to modify these compounds chemically as to produce an antiseptic compound excreted by the kidney—an internal and urinary antiseptic which was experimentally successful. Dr. Davis is investigating these compounds with a view to determining their power of penetration through the urethral mucosa while determining other antiseptic properties both in vitro and in the urinary tract.

Stanford.—Dr. R. L. Rigdon and Dr. A. S. Spalding, in the Gynæcological and Genito-urinary Laboratory of Leland Stanford University Medical School, are searching for a more effective treatment in acute and chronic gonorrhœa. They are devising ways of supervising their patients, investigating systematically new methods of treatment and checking efficiency by bacteriological examinations. In the neurological laboratory Dr. H. G. Hehrtens and Dr. Thomas Addis are conducting a research on the permeability of the meninges to antisyphilitic drugs and are attempting to find methods of treatment that will increase this permeability. Their plans contemplate an induced permeability through the intraspinous injection of autoserum. In the Dermatological Laboratory of the Stanford University Medical School, Dr. H. Alderson is searching for more effective methods of treating syphilis. He is checking up his methods with frequent repetitions of the Wassermann test and is investigating the "provocative Wassermann." Dr. R. A. Kensella is directing an investigation covering the bacteriology of the gonococcus—its growth peculiarities, its classification, its immunising properties, and its mode of infecting experimental animals. The programme of this research includes a study of the agents, biological or chemical, which neutralise the activities of the gonococcus or relieve its established effects. It is proposed to devote two or three years to the whole programme as outlined. This research under Dr. Kensella is being carried out in the Laboratory of Experimental Medicine at the St. Louis University School of Medicine.

Albany.—Two researches are being carried on in the Albany Medical College of Union University. One, under Dr. T. Ordway in the Departments of Physiology and Chemistry and the Laboratory of Physiological Chemistry, is concerned with the nature of the Wassermann reaction. Dr. Ordway writes that from the scientific standpoint there has been a marked change in our opinions concerning the Wassermann reaction. It was at first supposed that anti-bodies were present in the blood which united with the specific antigen. It was later found that organs from non-syphilitic persons and certain lipoid substances possessed antigenic properties; indeed, that such substances were more certain in their action than antigens made from pure cultures of the specific infectious agent, the *Treponema pallidum*, when obtained in vitro. It is not clear whether the Wassermann reaction is a specific, so-called immunity reaction, or whether it is a delicate biological indication which represents measurable chemical changes in the body fluids as a result of syphilitic infection. The second of the researches at the Albany Medical College is under the direction of Dr. George S. Graham, who, with his

associates in the Department of Pathology and Anatomical Laboratory and the X-ray Research Laboratory of the General Electric Company of Schenectady, is attempting to produce generalised infection in lower animals with the *Treponema pallidum* or the gonococcus. If the attempt is successful, these investigators propose to take up a pathological study of the lesions produced.

Washington.—Two researches are being carried out at the Washington University School of Medicine—one under Dr. M. F. Engman, Department of Medicine, Division of Dermatology and Biological Laboratories; the other under Dr. J. C. Jeans, Department of Pædiatrics. Dr. Engman, with his associates, is working to determine the status, if possible, of the latent syphilitic as a means of conjugal infection. He is attempting to obtain the exact clinical status of each individual patient with latent syphilis and to make a biological investigation of each of those patients to determine if the live *Spirochæta pallida* exist in the blood stream in the lymphatic glands of women with latent syphilis and in the semen of men with latent syphilis. Dr. James and his associates are making histologic examinations of a large number of placentæ for evidence of syphilitic involvement, comparing these findings, wherever possible, with the Wassermann reaction of the mother's serum and with a later clinical and serological examination of the infant. They hope to establish on a more accurate basis the value of placental examination in determining the presence of syphilis in the infant. They are collecting also tests from necropsy material of all married males 50 years of age or less. This material will be examined for spirochætes in those instances in which family studies are more or less complete.

Pennsylvania.—Dr. Bertha M. Maine and Dr. Rose Hirshler, of the Woman's Medical College of Pennsylvania, are making a serological study of syphilis in pregnant women and new-born children, with especial reference to the efficacy of the accepted methods of syphilitic treatment. They are studying the prevalence of syphilis among mothers and the new-born; investigating the subject of non-specific complement fixation during pregnancy; making a comparative study of serological and histological examinations of the placenta for syphilis, stating the comparative value of the accepted methods of specific treatment before and after delivery; searching for additional data on the time of the first appearance of the syphilitic reagin in the blood of the new-born; and seeking to determine if therapeutic benefit can be derived for the infant from the mother's milk.

Wisconsin.—An appropriation has been made to the University of Wisconsin enabling Dr. A. S. Loevenhart, Director of the Department of Pharmacology and Toxicology, to search for various compounds of arsenic and mercury which might be synthesised and be soluble in lipoids, and therefore show a predilection for the central nervous system. The object is to discover more efficacious drugs in syphilis of the central nervous system. Dr. Loevenhart and his collaborators at the University of Wisconsin are working in coöperation with Dr. W. Lee Lewis, professor of chemistry, Northwestern University, and to Dr. Roger Adams, professor of organic chemistry, University of Illinois. Dr. Lewis and Dr. Adams are engaged in research for new synthetic compounds carrying arsenic, the therapeutic values of which will be tested by Dr. Loevenhart.

Yale.—In the Brady Laboratory of Pathology and Bacteriology of the Yale School of Medicine in affiliation with the New Haven Hospital, Dr. M. C. Winternitz and Dr. G. H. Smith, with a group of assistants, are carrying out two researches. The first of their investigations is an intensive study of methods for the isolation and identification of the gonococcus with a view to the determination of the homogeneity and heterogeneity of strains and their ætiological relationships. This investigation will involve (1) the development of a more readily applicable and certain method of cultivation and identification of the gonococcus; (2) a study of cultural characteristics of the strains; (3) a study of serological reactions of the strains, with (4) particular reference to the serological properties of strains present in cases where vaccine therapy is inefficient. The second research being carried out by Dr. Winternitz and Dr. Smith is concerned with the demonstration of the syphilitic nature of unusual lesions encountered at the post-mortem table. With the elaboration of methods for the demonstration of the *Treponema pallidum* in tissues it will be possible to investigate (1) presumptive lesions of syphilis more thoroughly, and (2) the occurrence of *Treponema pallidum* without manifest anatomical changes in tissues, and an attempt to explain according to the morphology of the ætiological agent the foreign body type of reaction encountered in tertiary syphilis.

Concluding Summary.

In presenting this series of references to investigations which are being encouraged through grants of Federal funds, Dr. Snow and Dr. Storey state that it has been their purpose to illustrate lines of research which give promise of yielding new knowledge of very great value to the economic and social welfare of mankind, and particularly to the succeeding generations. The members of the Association for the Advancement of Science have it in their power to accelerate the campaign for the conquering of the venereal diseases, first by studies of the life-history of the infecting agents of these diseases and of their epidemiology; second by more actively participating in the development of a sound public opinion in support of a broad practical programme for combating them.

MEDICINE AND THE LAW.

The "Neglect" of Feeble-minded Children.

REFERENCE was made in THE LANCET of Feb. 21st (p. 468) to a case in which Mr. Justice Greer, sitting as vacation judge, made orders which had as their effect the handing back to the custody of his parents a youth, 20 years of age but mentally defective, who was being treated in an institution through the action of the Sheffield Corporation. The question raised by that body as the local statutory authority under the Mental Deficiency Act, 1913, is one of considerable importance to similar authorities desirous of making the Act effective within their jurisdiction. The lad concerned was admittedly a fit subject for institutional treatment on account of his mental condition, and his care had been undertaken by the local statutory authority without opposition from the parents, who, however, had apparently changed their minds and desired to have their son back in his home. The short question for decision was whether the corporation could resist that application on the ground that he was "found neglected" within the meaning of Section 2 of the Act when they took him over. It was not alleged that he was being "neglected" in the sense of being left by his parents without proper lodging, or food, or clothing. It was not, in short, a case of "neglect" such as is to be found in the cases of cruelty to normal children with which we are familiar. He was, however, receiving no special treatment or training, and the case for the local statutory authority was rather that, as applied to a mentally defective person under 21, the word "neglect" would be satisfied if there were a lack of such care, attention, and education as the institution offered would supply.

The importance of the case, of course, lies in the fact that there are many mentally defective children in working-class homes who are either becoming worse or, at any rate, are losing all chance of improvement such as an institution would afford. Their parents are quite kind to them and do their best for them, but are unable to improve their condition. They are perhaps fond of them, and in any event are unwilling to part with them. The second section referred to, where it is applicable, gives power to deal with a defective "who is found neglected, abandoned, or without visible means of support, or cruelly treated." The same words are used in a later section of the Act (Section 15), which enables a constable to take to a place of safety a person whom he believes to be a defective and whom he finds

"neglected, abandoned, or without visible means of support, or cruelly treated." Read together these expressions certainly leave doubtful the meaning which the Sheffield authority, actuated by a perfectly right and praiseworthy public spirit, sought to apply to the word "neglected."

In the present case there has been no further resistance. The orders nisi made upon writs of certiorari and habeas corpus by Mr. Justice Greer have been made absolute without opposition. This leaves the matter as a decision of a particular judge upon particular facts before him. If at any future time a local statutory authority under the Mental Deficiency Act gets a similar order made against it, or one in its favour, and the making absolute of the rule is opposed, the court will, no doubt, decide whether "neglect" in the case of a "mentally defective" differs from "neglect" as applied to the case of a normal child. The public and the legislature will then agree whether it is desirable that the law should be amended in the direction of increased efficiency or whether the prejudices of parents should prevail. They are natural and excusable prejudices, but they are certainly undesirable in the interest of the defective person.

Drunkenness as a Defence in Trials for Murder.

The House of Lords allowed recently an appeal from the Court of Criminal Appeal which had quashed a conviction for murder and had substituted a verdict of manslaughter in the case of R. V. Beard. Beard, being drunk, killed a child of 13 when committing rape upon her through suffocating her in the attempt to prevent her from screaming. The question for determination by the House of Lords was in what circumstances drunkenness can be taken into consideration for the purpose of reducing the crime of murder to manslaughter. The judgment delivered by the Lord Chancellor will be found reported at length in the *Times* of March 6th by those interested in a question which must always be closely associated with, and determined by, medical evidence. Without following the Lord Chancellor in recapitulating the history of the law regarding insanity and drunkenness as defences, and in the consideration of the precise extent to which the summing up in this particular case was defective, we may state briefly that the judgment in Beard's case may be taken to decide authoritatively that: 1. Insanity produced by alcoholism, such as an attack of delirium tremens, is to be distinguished from drunkenness, and that the tests laid down in 1843 in McNaughton's case are to be applied only when the former has been proved, and not in cases of drunkenness. 2. Evidence of drunkenness rendering the accused incapable of the intent essential to constitute the crime should be taken into account with other facts proved in order to determine whether or not he had that intent. 3. Evidence of drunkenness falling short of that indicated in (2) and establishing merely that his mind was affected by drink so that he more readily gave way to some violent passion does not rebut the presumption that a man intended the natural consequences of his acts.

In applying these principles to the case of Beard the Lord Chancellor pointed out that drunkenness could be no defence unless it could be established that Beard at the time of committing rape was so drunk that he was incapable of forming the intent to commit it, which was not the fact, and having regard to the evidence could not be contended. It was doubtful, in his lordship's opinion, whether there was any sufficient evidence to go to the jury that the prisoner was in any relevant sense drunk at all. There was certainly no evidence that he was too drunk to form the intent of rape, and an act of violence in furtherance of that felony was the cause of death. Such a killing was by the law of England murder. The appeal consequently was allowed and the conviction of murder restored, but it is understood that the capital sentence originally passed will not now be carried out.

The Contract in Panel Practice.

In a series of letters to the *Medical World* Mr. Adam Fox has criticised the position with regard to panel practice. He comments adversely upon the views of the authorities with regard to the disposal of goodwill in relation to panel practice and the attendance upon panel patients in emergency by other doctors at the cost of a medical man absent when summoned by a patient. He will have found many sympathisers in the views he expresses on these and other points. The lowering of the maximum number of patients to be on the list of any one practitioner, for example, is not likely to be welcomed by those whose lists exceed or are beginning to approach the maximum recommended. There is, however, one point where it is not at all clear that Mr. Fox is right, not merely in his opinion but in the reason which he gives for it. He is insistent in urging that the law courts should be open to practitioners signing contracts with Insurance Committees in disputes arising out of their fulfilment, and complains that "the right of appeal to the courts on the merits of a case is still refused. (It exists on a question of procedure mainly.)" We feel doubtful as to this grievance, and are not convinced of the wisdom of submitting to judges, or judges and juries, questions which are now sifted thoroughly by persons who, whatever their shortcomings, are familiar with their subject. We doubt if medical practitioners would find the change satisfactory. If, however, Mr. Fox is entitled to put forward a contrary opinion we venture to question the reasoning by which he supports it, and emphasises his advice to practitioners to refuse to sign the agreement, or contract, with an Insurance Committee. This we find dwelt upon in a letter published by our contemporary on Oct. 5th, 1917, and now reprinted in the form of a circular. "A contract," Mr. Fox writes, "is an agreement upon fixed terms, involving consideration and compensation made between responsible parties, and is therefore enforceable by law." "The document signed is not a contract." "The British Constitution gives every British subject the inherent right of having the law courts thrown open to him, and which even an Act of Parliament cannot take from him." This may be arguable within limits, but though the great majority of contracts are enforceable at law, we are all of us familiar with others which are not, and the right to enforce which has been expressly taken away by Acts of Parliament. It is a different matter to advise that "the only safe course for panel practitioners is to refuse to sign any document which is not a contract enforceable at law." Once signed, as matters stand, the contract precludes recourse to the law courts. If, however, a combined refusal to accept such contracts is urged, it must, on the other hand, be remembered that tribunals are provided to take the place of the law courts, which some may regard as better equipped for the purpose, and that, secondly, this has been done to enable the patients of panel practitioners to secure a hearing of their grievances without the expense and formalities attendant upon legal proceedings. In estimating the probability of success following upon such combined resistance as Mr. Fox urges, this latter point should be carefully considered.

FATAL ACCIDENT TO A RAND DOCTOR.—Dr. Donald Macaulay, a well-known medical man on the Rand, was killed by his own motor-car in Johannesburg on Jan. 27th. It is presumed that he must have cranked up the car in gear, with the result that it knocked him down and pinned him underneath, where he was found next morning. Dr. Macaulay was a graduate of Edinburgh University, for which he retained a great affection, and one of his sons is at present a medical student there. He had for many years been in charge of the health of the natives employed at the Geldenhuis Deep and other mines, and of a large native hospital. When a member of the House of Assembly for Denver his constituents were mainly miners, with whom he was very popular, and he lost no opportunity of furthering their interests in the House. He also instituted a campaign in favour of the compulsory medical inspection of children in the schools. During the war Dr. Macaulay served on a hospital ship in the German South-West Africa campaign, and afterwards in the Mediterranean. During the operations in German East Africa he was in charge of the hospital ship *Ebani*, which was fitted out under his supervision. Dr. Macaulay was one of the best known and most popular figures on the Rand, and will be greatly missed.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING

Oct. 31st, 1919.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar.	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	13	0·19	1·24	3·51	0·52	1·45	6·91	0·45	0·42	0·02
Embankment Gardens	17	0·27	3·07	8·11	1·79	3·42	16·67	2·05	0·46	0·09
Finsbury Park	19	0·14	1·40	5·05	2·87	4·91	14·36	3·24	0·35	0·10
Southwark Park	23	0·10	2·73	5·42	3·85	5·87	17·97	4·16	0·62	0·21
Victoria Park	27	0·10	1·86	4·27	3·42	5·43	15·09	3·79	0·42	0·12
Wandsworth Com.	17	0·07	1·01	1·76	3·51	5·72	12·06	3·58	0·52	0·97
Golden Lane	18	0·06	2·43	3·69	1·41	2·82	10·41	1·59	0·62	0·15
Malvern	62	—	0·05	0·12	0·61	1·38	2·16	0·74	0·12	0·01
Newcastle-on-Tyne	130	0·20	3·74	6·05	4·15	5·71	19·85	2·67	1·84	0·19
Rochdale	—	—	—	—	—	—	28·51	—	—	—
Rothamsted	25	—	0·21	0·36	0·84	2·39	3·80	—	—	—
St. Helens	65	0·32	3·29	8·21	0·48	3·55	15·85	1·03	0·64	0·08
Southport—										
Hesketh Park	73	0·02	0·36	0·93	0·54	4·16	6·01	1·27	0·36	0·03
Woodvale Moss	73	—	—	—	—	—	6·27	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park	21	0·02	1·00	2·91	0·54	1·38	5·85	0·93	0·17	0·07
Bellahouston Pk.	21	0·06	1·08	1·66	0·47	1·58	4·85	0·72	0·14	—
Blythswood Sq.	23	0·05	0·97	2·80	0·70	1·88	6·40	0·93	0·12	0·07
Botanic Gdns.	22	0·08	1·55	3·59	0·73	1·82	7·77	0·85	0·08	0·04
Richmond Park	24	0·09	1·06	3·23	0·74	1·84	6·96	1·14	0·09	0·06
Ruchill Park	24	0·07	1·56	2·88	0·48	1·46	6·45	0·80	0·08	0·08
Queen's Park	22	0·04	0·60	1·35	0·29	1·49	3·77	0·53	0·08	0·04
Tollcross Park	24	0·11	1·07	3·86	0·86	2·05	7·95	1·08	0·10	0·05
Victoria Park	23	0·06	1·32	2·60	0·54	1·87	6·39	0·89	0·09	0·06

Nov. 30th, 1919.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar.	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	21	0·20	2·20	2·83	0·75	0·67	6·65	0·44	0·44	0·05
Embankment Gardens	23	0·17	2·77	7·66	1·45	3·44	15·49	1·81	0·62	0·09
Finsbury Park	31	0·11	2·38	6·77	2·82	5·62	17·70	2·86	0·53	0·08
Ravenscourt Pk.	16	0·00	0·40	1·64	2·08	2·89	7·02	1·64	0·51	0·12
Southwark Park	17	0·04	1·36	2·61	2·34	4·35	10·70	2·40	0·62	0·11
Victoria Park	27	0·05	2·59	9·37	2·88	4·24	19·12	2·71	0·48	0·11
Wandsworth Com.	16	0·06	0·74	1·98	2·52	3·56	8·86	1·88	0·56	0·06
Golden Lane	39	0·09	3·60	5·62	2·53	4·74	16·57	2·30	0·93	0·40
Malvern	36	—	0·14	0·49	0·34	0·54	1·52	0·54	0·15	Tr.
Rothamsted	48	—	0·28	0·27	2·42	3·61	6·59	—	—	—
St. Helens	67	0·28	2·88	4·77	0·20	4·47	12·60	1·55	0·67	0·07
Southport—										
Hesketh Park	52	0·02	0·58	1·28	1·19	3·69	6·76	1·20	0·69	0·02
Woodvale Moss	31	—	—	—	—	—	4·05	—	—	—
SCOTLAND.										
Glasgow—										
Bellahouston Pk.	93	0·07	1·41	3·17	2·84	4·96	12·45	2·89	0·71	0·11
Botanic Gdns.	97	0·07	1·19	2·62	2·65	5·29	11·82	3·67	0·60	0·15
Queen's Park	110	0·10	1·60	2·95	2·60	4·12	11·37	2·98	0·64	0·10
Richmond Park	104	0·18	2·12	7·04	2·70	6·43	18·47	3·20	0·71	0·23
Ruchill Park	110	0·09	1·45	2·82	1·59	5·64	11·59	3·68	0·64	0·15
Tollcross Park	120	0·08	1·63	3·39	2·56	4·93	12·59	3·19	0·67	0·14

There were no returns during the month of October from the following stations: London (Ravenscourt Park), the results being omitted as doubtful, and the two stations at Manchester. In November, again, there were no returns from the Manchester stations, and also Newcastle-on-Tyne and Rochdale, while at three Glasgow stations (Alexandra Park, Blythswood-square, and Victoria Park) the bottles containing the rainfall were broken by frost. Lead was reported present in the insoluble matter of the Glasgow specimens examined.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9 lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall. Tr. = Trace.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

URBAN VITAL STATISTICS.

(Week ended March 6th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons for the middle of last year, the annual rate of mortality, which had been 16·2, 15·6, and 16·4 in the three preceding weeks, rose to 16·9 per 1000. In London, with a population of nearly 4½ million persons, the annual death-rate was 17·4, or 0·4 per 1000 above the revised rate recorded in the previous week, while among the remaining towns the rates ranged from 5·7 in Carlisle, 8·6 in Eastbourne, and 9·0 in Cambridge, to 25·7 in Leeds, 26·4 in Aberdare, and 27·1 in Liverpool. The principal epidemic diseases caused 486 deaths, which corresponded to an annual rate of 1·4 per 1000, and comprised 210 from measles, 109 from whooping-cough, 87 from diphtheria, 53 from infantile diarrhœa, 23 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 2·6 in Grimsby and in St. Helens, 3·1 in Gloucester, and 5·0 in Barnsley; whooping-cough of 1·2 in Stockport, 1·4 in Birkenhead, 1·6 in West Hartlepool, and 1·7 in Lincoln; and diphtheria of 1·7 in Leyton and 1·8 in Hastings. The deaths from influenza, which had increased from 66 to 178 in the five preceding weeks, rose to 196, and included 54 in London, 27 in Birmingham, 14 in Leeds, 10 in Liverpool, and 7 in Manchester. There were 2255 cases of scarlet fever, 2006 of diphtheria, and 7 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2316, 2026, and 4 respectively at the end of the previous week. The causes of 43 deaths in the 96 towns were uncertified, of which 9 were registered in Birmingham and 3 each in London, Liverpool, South Shields, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at 2,400,000 persons, the annual rate of mortality, which had been 14·7, 14·2, and 15·7 in the three preceding weeks, was again 15·7 per 1000. The 337 deaths in Glasgow corresponded to an annual rate of 15·8 per 1000, and included 5 each from measles, whooping-cough, diphtheria, infantile diarrhœa, and influenza, and 3 from scarlet fever. The 79 deaths in Edinburgh were equal to a rate of 12·1 per 1000, and included 2 each from measles and infantile diarrhœa and 1 from diphtheria.

Irish Towns.—The 165 deaths in Dublin corresponded to an annual rate of 20·7, or 1·2 per 1000 below that recorded in the previous week, and included 7 from whooping-cough, 4 from influenza, 3 from diphtheria, and 1 from infantile diarrhœa. The 214 deaths in Belfast were equal to a rate of 27·0 per 1000, and included 12 from influenza, 4 each from measles, scarlet fever, and whooping-cough, 2 each from enteric fever and infantile diarrhœa, and 1 from diphtheria.

BIRMINGHAM DENTAL HOSPITAL.—The annual report of this hospital, of which Sir William Bowater is the President, shows an adverse balance on the year's working of £248. In the forthcoming year at least 12 new dental operating chairs, at a cost of about £450, will be required, and the increase in the number of students will have to be provided for. The report of the surgical committee states that conservative operations for the preservation of the natural teeth and combating disease have greatly increased in number. There are signs of a large influx of students to the institution, the centre of dental treatment in the Midlands, and it is hoped that the Government and subscribers of the hospital will spare no effort to assist them in the provision of facilities for the training of these men.

Correspondence.

"Audi alteram partem."

THE DIAGNOSIS OF MALARIA.

To the Editor of THE LANCET.

SIR,—The publication of a letter from Colonel Mathew O'Connell in your issue of Feb. 28th and your annotation upon the probability-diagnosis of malaria calls for some reply from myself, as it was my article upon the necessity for early diagnosis and early treatment of malaria in armies in the field which prompted this correspondence. In the first place, I think it is a pity that anyone should throw cold water at the present moment upon microscopic diagnosis, which has been proved to be the most important and necessary and reliable means of diagnosis in malaria with a view to treatment; for if this is not the object of Colonel O'Connell's letter I fail to understand the issue that is at stake, nor can I see how the classical experiments of Sir Patrick Manson have any bearing upon microscopic diagnosis as applied to military medicine during the war in Palestine. I am sure Colonel O'Connell will admit that, by instituting a system of microscopic diagnosis in the field, many valuable lives were saved which would otherwise have been lost through non-administration of quinine, nor can I estimate how much military disability was thereby avoided. There can be no question, I submit, that everyone who served with the armies in the East during the war fully appreciated that a microscope and an expert pathologist—for a microscope without a trained eye behind it is of little use—are as essential a part of the field ambulance equipment as are surgical instruments, stethoscopes, or the inevitable cholera outfit which is so carefully treasured, but seldom used. How many hundred diagnoses of malaria, which would otherwise have been missed on clinical grounds, were made during these epidemics of subtertian malaria I would not like to guess, but whenever the clinical diagnosis became unsatisfactory in the midst of phlebotomus fever, influenza, relapsing fever, and enteric, the man with a microscope scored every time.

I remember standing in a casualty clearing station one morning in December, 1917, when a large number of sick filed past bearing upon their field cards such varied diagnoses as debility, bronchitis, influenza, pleurisy, disordered action of the heart, and what not, and how I found on microscopical examination no less than 22 were virulent infections with the subtertian parasite. This rapid examination occupied less than half an hour, but it is more than possible, since malaria had not been suspected at that season of the year, that all these men would have been evacuated down the line and would not have received specific quinine treatment till some two or three days later, and possibly one or more would have succumbed.

One has only to glance at the official report upon malaria in Palestine during 1918 in order to convince oneself that the early microscopic diagnosis of malaria helped to conserve the man-power of Allenby's force during that fateful summer, and I do not think it is an exaggeration to claim that nearly a division of European troops was spared by these means for the great advance in September of that year. From official sources it is known that no less than 35,439 cases, or one-tenth of the total force, were microscopically diagnosed as malaria during 1918, and of these no less than 24,748 were verified by eight laboratories and diagnosis stations primarily near the front line, 14,842 being benign and 9906 subtertian infections. The total number of blood examinations undertaken by these field laboratories and diagnosis stations was 111,261, a third of the total fighting force, in a period of less than six months.

During the advance into Syria the number of cases of severe or malignant malaria reached the colossal figure of 1800 fresh infections a week. Even this figure cannot be taken as comprising the total number, as owing to the rapidity of the advance complete microscopic diagnosis became impossible. Even the differentiation of the two main forms of malaria—for instance, the benign, which seldom, if ever, kills—from the subtertian, which proved to be responsible for nearly 800 deaths in 1918, should alone justify the adoption of a microscopic diagnosis in every case of pyrexia. I am willing to grant that a very small proportion of cases may not be diagnosed on one microscopic examination alone owing to scantiness of the parasites in the peripheral blood or the early stage of the disease; but one's chances are greatly increased if a three-slide rule on three separate occasions, or even the thick film method, is adopted. It was by the institution of a routine of this kind that many benign cases (some 3000 in all) were retained for further service near the front line instead of being sent to hospital at the base, as would otherwise have been the case.

Colonel O'Connell quotes me as saying that three cases originally diagnosed as sunstroke, five as dysentery, &c., were afterwards found to be suffering from subtertian malaria—a very small number in so large a force. This is hardly correct. I quoted no numbers of the total misdiagnoses, but only gave instances where the discovery was made too late—on the post-mortem table! I would like to cite one instance in this connexion. After the occupation of Damascus one pathologist reported 11 out of 15 patients isolated as dysentery, and 30 out of 45 diagnosed as influenza were in reality subtertian malaria, in one field ambulance alone. This by no means exhausts an extensive list of critical medical and even surgical cases in which the diagnosis and treatment were made clear by simple microscopic examination. I have seen three cases sent down as lunatics, two of which were fatal subtertian infections, and one man under arrest for suspected drunkenness for the same reason.

After the adoption of the diagnosis station scheme in the E.E.F. I find from my records of over 100 autopsies on malarial cases that in no single instance had the existence of the infection been missed during the victim's lifetime. This certainly was not the case before the adoption of the scheme.

I do not think it is claiming too much to say that field laboratories more than justified their existence in the E.E.F.; at any rate, they assisted in making a diagnosis in at least 80 per cent. of medical cases. The amount of work they got through was phenomenal. In the last laboratory to which I was attached two officers and three men were responsible for over 62,000 reports on blood and fæces, including over 500 blood examinations for malaria in one day, during the year 1918. One of the great advances in clinical medicine has undoubtedly been our ability to diagnose malaria infections with precision, and, again, I hope that Colonel O'Connell's letter will not lead to the diminished use of the microscope in malaria diagnosis; even in the case of patients in this country I know of cases in which, for want of a microscopic examination, the real cause of death or illness—malaria—has been overlooked.

I am, Sir, yours faithfully,

PHILIP MANSON-BAHR.

Weymouth-street, W., March 1st, 1920.

THE SITE OF INOCULATION IN SYPHILIS.

To the Editor of THE LANCET.

SIR,—Having read the investigations on syphilis which have been conducted by Dr. P. Fildes and Surgeon-Lieutenant Commander R. J. G. Parnell at Haslar Hospital (Medical Research Committee, Special Report Series, No. 41 and 45 (see p. 614)), I asked the writers if they could supply me with data regarding the sites of inoculation of their patients. In response Dr. Parnell has most kindly supplied me with the data of 2743 consecutive cases of the Haslar series. It will be seen that 68·7 per cent. of patients are infected on the prepuce, glans, or meatus (4·4 per cent. under a phimosed prepuce), 10·6 per cent. on the body or root of penis or on the scrotum, 19 per cent. unstated or combined lesions, and 1·7 per cent. extragenital lesions.

These facts were supplied with the permission of the Medical Director-General of the Navy; and, as I think

they are of general interest to the medical profession at the present time, I have asked and obtained leave to publish the table which is herewith appended.

I am, Sir, yours faithfully,

DOUGLAS WHITE,
Honorary Secretary, National Council for Combating Venereal Diseases.
Avenue Chambers, Southampton-row, London, W.C.,
March 2nd, 1920.

ENCLOSURE.

Sites of Inoculation Lesions in 2743 Cases of Syphilis.

From the Indexed Records at R.N. Hospital, Haslar, by Surgeon-Lieut.-Commander R. J. G. PARNELL, R.N., Specialist in Venereal Diseases, Haslar.

Genital Inoculation Lesions.

In urethra (concealed)	2	In sulcus	420
Within meatus (concealed)	25	On prepuce (skin 328, mucous membrane 346)	674
At meatus (visible)	94		
On glans penis	270	On frænum preputii	192
On corona glandis	86	Phimosed prepuce (concealed)	121

Total, 1884 = 68·7 per cent.

Body of penis	209	Scrotum	20
Root of penis	50	Peni-scrotal angle	13

Total, 292 = 10·6 per cent.

Site on penis not stated	238	Combinations of above	283

Total, 521 = 19 per cent.

Extragenital Inoculation Lesions.

Lip	20	Finger	2
Eye (palpebral conjunctiva)	3	Umbilicus	1
Anus (at or near)	7	Nose	1
Thigh	2	Neck	1
Pubes	6	Abdomen	1
Chin	1	Buttock	1

Total, 46 = 1·7 per cent.

Remarks.

1. In addition, 101 cases had manifest signs of syphilis or had cerebro-spinal syphilis, yet no site of the inoculation lesion was found; all the men denied a sore on the penis. A few of these men gave a history of "gonorrhœas." The majority denied having had V.D. in any form, *but admitted risks of infection*. A very small number denied V.D. and stated that they had never exposed themselves to infection. Three of these had definite signs of congenital syphilis.
2. One case of genital and extragenital inoculation lesions occurred (lip and penis).
3. Of the 238 cases in which the site (on penis) was not stated, the vast majority of these were old infections giving a definite history of a sore on the penis, but no scar was found. In a few cases there was an indefinite amount of scarring at a site other than that at which the sore apparently had been.
4. 46 cases were extragenital—1·7 per cent.

MYALGIC PAINS AND MANIPULATION.

To the Editor of THE LANCET.

SIR,—At the risk of appearing tedious I would like to add a few words to Mr. Haldin Davies's letter which appeared under the above title in your issue of Jan. 10th. Mr. Davies says that there is "something in manipulative surgery"; with that conclusion I cordially agree. No one was more opposed than myself to any recognition of or concession to unqualified practitioners, but when case after case drifted off to the manipulative surgeon only to return cured it gave me furiously to think. Much against my inclination I am compelled to admit that the manipulative surgeon possesses some skill which I and possibly some of my professional colleagues lack.

So many cases of displaced cartilage and deranged joints have been put right by simple manipulation when I and others had failed that I am bound to confess that such patients were well spared the operation that had been suggested. It seems a pity that the profession declines to investigate these problems. The proposition is a simple one: either the manipulative surgeon possesses some special skill of which the public and the profession should have the benefit, or a large number of medical men and a larger number of the public have been hopelessly misled. It is difficult, if not impossible, to accept this latter alternative.

The whole matter could easily be cleared up by an investigating committee, and I am not by any means alone in wishing to have this done. Believing, as I do, that many cases of deranged joints can be submitted successfully to manipulation, which I myself cannot practise, am I justified in advising an operation of definite risk and of somewhat uncertain result until these milder manipulative measures have been tried?

I am, Sir, yours faithfully,

March 6th, 1920. W. H. CLAYTON-GREENE.

BLIND MASSEURS.

To the Editor of THE LANCET.

SIR,—Had I known that my letter would be published I should have asked you to spare me space to go into details, for which a mere acknowledgement did not seem to call. I entirely endorse the admirable letter of Major W. H. Broad, who, I may say, has had an exceptionally wide experience of the work of the blind masseur, and whose admirable orthopædic work is known to most members of the medical profession.

For reasons which I am free to confess do not seem entirely convincing to myself, or to many eminent medical men, it has been thought fit to impose limitations upon the examinations in remedial exercises which are set to blind students, and this in spite of the fact that a totally blind man passed the full examinations set to sighted folk, and not only passed them, but was first in the list. This blind man has exceptional ability, and perhaps the full examination might be rather beyond the scope of some blind masseurs. At the same time, the examination which is set them renders a man who passes it quite proficient, for all ordinary requirements, and would prove amply sufficient for any but very special cases.

I very much fear that the publication of my letter in your last issue may lead your readers to suppose that I do not possess full faith in the qualifications of the blind masseur. This is very far from being the case. The blinded soldiers who have been trained in this most useful profession are giving complete satisfaction in all parts of the British Empire; indeed, I go so far as to say that wonderful as the successes of St. Dunstan's have been, the success of those of its inmates who have been trained in massage is the most wonderful of all.

I am, Sir, yours faithfully,

ARTHUR PEARSON,
Chairman, Blinded Soldiers' and Sailors' Care Committee
President, National Institute for the Blind,
224, Great Portland-street, London, W.
St. Dunstan's, Hanover Gate, Regent's Park, N.W.1,
March 6th, 1920.

*** We could have no idea that Sir Arthur Pearson did not intend his letter for publication. Like him we have every sympathy with the blind students, and are aware of their exceptional qualities in many directions. The annotation indicated a place in the masseur's work where the blind must, in our opinion, be handicapped, and that view is unaltered.—ED. L.

TREATMENT OF CARBUNCLES, BOILS, ETC., BY LARGE DOSES OF DILUTE SULPHURIC ACID.

To the Editor of THE LANCET.

SIR,—On March 15th, 1913, I called attention in THE LANCET to the great success of the dilute sulphuric acid treatment in the above-mentioned conditions and staphylococcic infection generally. Since the date mentioned I have had some very severe cases to deal with, which have resisted all ordinary remedies, including injections with serum, but have yielded completely to the sulphuric acid treatment.

Only three weeks ago I had a most inveterate case of acne sent to me of 20 years' standing, which had been treated by all the ordinary means and for the last few years by repeated injections of serum without any benefit. I put this patient at once on 30-minim doses of dilute sulphuric acid (made by adding 3 fluid ounces of the strong acid to 29 fluid ounces of water) and the result has been a complete cure in three weeks. This particular patient was covered over the whole body from head to foot with pustules and was a splendid example of the power of this simple remedy when given internally and in sufficient doses (i.e., ♏ xx. to ♏ xxx.) also of the right strength.

As I said in my former communication to your journal, smaller doses of a weaker strength of the acid are of no use whatever. The 30-minim dose, diluted with a wineglassful of water is, in my experience of over 40 years, always well tolerated, and has, without exception, always proved successful. My son, Dr.

Russell J. Reynolds, who has returned from active service in India, tells me it is being used by some of the medical officers there with the best results. I feel that in all cases of suppuration it should at least be tried. My reason for writing again on this subject is that this mode of treatment does not seem even now to be sufficiently well known.

I am, Sir, yours faithfully,

J. REYNOLDS, M.D. Brux., M.R.C.S.

Brixton-hill, S.W., March 6th, 1920.

Obituary.

SAMUEL WEST, M.A., M.D. OXON., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S AND THE ROYAL FREE HOSPITALS.

THE death of Dr. Samuel West on March 2nd, at the age of 72, removes another of that band of London physicians which understood how to reconcile the claims of important teaching appointments with private consulting work, and still to find time to devote to public and benevolent purposes.

Samuel Hatch West was born at Carlisle on April 13th, 1848, the son of John West, Deputy Inspector-General of Mails to the General Post Office. He was educated at Westminster School, where he was Queen's scholar, going on to Christ Church, Oxford, where, after taking honours in Classical Moderations, he began the work of his life by studying physiology in the museum under Professor Rolleston. In this subject he took a first-class in the Final Schools. Even then his teachers recognised in him a man with a future, for, beginning as a successful pupil, he soon became a close friend of both Rolleston and Acland, and he was elected Radcliffe Travelling Fellow. Probably West's choice of St. Bartholomew's as his medical school was determined by his friendship with Rolleston. Since in those days the official course of study for the Oxford M.B. could not begin till after taking the B.A., West and his contemporaries from Oxford were what would be now called "full-time students" at St. Bartholomew's. In the preliminary subjects and in physiology he had not much to learn there, but he filled up his spare time with advanced and original work. Working under the late Dr. W. J. Russell, he designed a method of estimating the urea in urine by means of the hypobromite reaction, and later was one of the first to apply this clinically. His study of medicine proper was carried out chiefly in the wards of Dr. James Andrew. After qualification he became house physician to Andrew, and between them close bonds of intimacy developed. They were from the same university, had the same eager capacity for work and devotion to medicine, and West very early in his career became Andrew's colleague at Victoria Park Hospital. Andrew's influence upon him was seen later in his principal publications, which were on diseases of the respiratory organs and on granular kidney.

Graduating M.B. Oxf. in 1875, and obtaining the M.R.C.P. Lond. in 1877, Dr. West became assistant physician to St. Bartholomew's Hospital in 1887, and full physician 17 years later, holding, at the same time, the lectureship in the principles and practice of medicine. At the same time he was physician to the Royal Free Hospital and to the Victoria Park Chest Hospital.

One of his colleagues writes of this period of his life: "When at the Royal Free Hospital, on the illness of Dr. Buchanan Baxter, and subsequently at the Victoria Park Chest Hospital, the writer first became associated with Dr. West, he received much kindness at his hands and much help, for which the indebtedness remains. On many occasions the junior colleague was accustomed to turn to his senior for assistance in difficult clinical cases, and he never failed to be impressed by his clinical acumen, his breadth of view, and the soundness of his advice. His teaching was greatly valued by the students at the Royal Free Hospital, and in proof of this it may be stated that if they had a grievance it was that they wanted more not less of that which he had to impart. ..... As physician Dr. West was essentially the clinician, for though he came to the bedside thoroughly conversant with scientific methods, and, in particular, with an exceptional knowledge of chemistry, he avoided the shallows of the ultra-scientific application of those methods. He was a close student of pathology, and both in his outlook and in his teaching it figured prominently."

Recognised thus as teacher and clinician, Dr. West held, as was natural, at one time or another, positions as examiner at the Universities of Oxford, Cambridge, London, and Birmingham, and at the Conjoint Board. He was three times censor to the Royal College of Physicians of London. He presided over the medical and the clinical sections of the Royal Society of Medicine. He was Lettsomian lecturer and treasurer to the Medical Society of London.

And first and foremost he will be gratefully remembered for his labours to alleviate distress through the Royal Medical Benevolent Fund. Here he held office continuously from 1893, when he became honorary financial secretary. In 1899 he succeeded Sir W. Broadbent as treasurer, on the latter becoming president of the Fund. On the resignation of Sir John Tweedy in 1917, Dr. West became president until the time of his death. In this long service Dr. West became so identified with the Fund that some spoke of it as "West's Fund." As treasurer one of his first acts was to insist that all legacies should be invested to provide annuities, and he had the satisfaction of seeing the number increased from 100 to 170, while the total income of the Fund rose during his management from £3625 to over £7000. Owing principally to his exertions, consent was obtained to apply the term "Royal" to the Fund, with the name of Prince Arthur of Connaught as vice-patron. In the following year he organised the festival dinner and secured in subscriptions over £3000. Foreseeing the probable financial difficulties in which many medical men, suddenly called to join the army and leave their practices, would be placed, Dr. West initiated the special War Emergency Fund, and one of his last acts was to secure from the National Relief Fund a donation of £10,000 towards its objects. During the war he became chairman of the executive committee of the Professional Classes War Relief Council. Through this agency he was able to place valuable information regarding education at the disposal of many medical men. Only those who knew Dr. West's keen interest in these Funds can appreciate the time and care he gave to their welfare.

West was not a voluminous writer, but at each stage of his active work he contributed something to exact knowledge. His practical guide for the use of students entitled "How to Examine the Chest," appearing first in 1883, ran into three editions. His Lettsomian lectures on Granular Kidney and Physiological Albuminuria, published in 1899, were for many years a standard work of reference. A second edition of his largest work on "Diseases of the Organs of Respiration," in two volumes, was published in 1909. His smaller writings included articles, in different journals and year books, on acute and chronic nephritis, pneumothorax, sulph-hæmoglobinæmia, the amount of nitrogen excreted by man at rest, and hypertrophy and dilatation of the heart.

Of West's personal qualities it is difficult to give a comprehensive view. He was a sociable man, full of many interests. He had a great capacity for clear thinking and exposition, and also for organisation. An excellent musician and a good singer, while house physician at St. Bartholomew's Hospital he organised, along with his colleagues in office, Darbishire, Abercrombie, and Ormerod, a concert in the Great Hall which became an annual affair, and from which developed the present hospital musical society. The finer qualities of head and heart—friendliness, good fellowship, social attractiveness, wide human interests—all these West possessed in a high degree, and combined with ability, energy, and devotion to medicine, they

made possible that life full of distinction and of useful work for which he will be long remembered.

Dr. West married Margaret, daughter of Sir Edward Frankland, F.R.S., by whom he had three sons and three daughters.

SIR THOMAS ANDERSON STUART, M.D., LL.D. EDIN., D.SC. DURH.,

PROFESSOR OF PHYSIOLOGY AND DEAN OF THE MEDICAL FACULTY IN THE UNIVERSITY OF SYDNEY.

THE death is announced of Professor Stuart, who was largely responsible for the existing public health legislation in New South Wales, and whose interest in his calling materially promoted the welfare and dignity of medicine in Australia.

Thomas Anderson Stuart was born at Dumfries on June 20th, 1856, the son of Alexander Stuart, Dean of Guild. He was educated at the Dumfries Academy, at the gymnasium at Wolfenbüttel, and in the Universities of Edinburgh and Strasburg, graduating M.B., M.Ch. at Edinburgh in 1880 with first-class honours and the Ettles scholarship. The following year he was appointed assistant to the Professor of Institutes of Medicine, proceeding later to the M.D. of the University, when he was gold medallist.

His name will be chiefly associated with Australia, where he spent his life from the time when he went out in 1883 to be professor of physiology in Sydney. In his new country his life was a long story of official appointments successfully discharged. He was twice president of the Royal Society of New South Wales, and among the many offices which he held were those of medical adviser to the Government and health officer for Port Jackson, president of the Board of Health, chairman of the board of directors of Royal Prince Alfred Hospital, president of the Health Society of New South Wales, president of Civil Ambulance Brigade, trustee of the Australian Museum, president of the Highland Society of New South Wales, councillor of the Women's College, president of the Zoological Society, vice-president of the Industrial Blind Institution. He took a prominent part in all public health and educational movements, and was president of the British Immigration League of Australia. He was an honorary M.D. of the Universities of Sydney and Melbourne, in 1900 was given the LL.D. by the University of Edinburgh, and later the D.Sc. by the University of Durham.

In 1914 he received the honour of knighthood in recognition of his full and valuable activities.

The Services.

ARMY MEDICAL SERVICE.

Col. N. Faichnie retires on retired pay.

Temp. Hon. Col. Sir J. Collie relinquishes his commission, and is granted the honorary rank of Lieutenant-Colonel.

ROYAL ARMY MEDICAL CORPS.

Temp. Lieut.-Col. R. P. Jack (Lieut.-Col., Sco. Rif., T.F. Res.) relinquishes his temporary commission.

Major J. H. Campbell and Temp. Capt. J. P. Davidson relinquish the acting rank of Lieutenant-Colonel.

Major H. T. Wilson relinquishes the temporary rank of Lieutenant-Colonel.

Temp. Major N. G. Cooper to be acting Lieutenant-Colonel.

Temp. Capt. F. D. Saner relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Major I. A. O. MacCarthy retires on retired pay.

Temp. Major W. C. Bosanquet (Bt. Major, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

The undermentioned relinquish the acting rank of Major: Capt. H. G. Winter; Temp. Capts. E. J. Selby, G. W. R. Rudkin, A. Scott, C. A. Brisco, L. H. C. Birkbeck, G. C. Adeney.

Temp. Capt. A. W. Wilcox to be acting Major whilst commanding troops on a hospital ship.

Capt. E. G. S. Cane to be temporary Major whilst specially employed.

G. W. Beresford, late temporary Captain, to be temporary Major.

Temp. Capt. W. J. Pearson to be acting Major.

Capt. J. W. C. Stubbs is seconded for service with the Egyptian Army.

J. G. Shaw, late Can. A.M.C., to be temporary Captain.

The undermentioned Lieutenants (temporary Captains) to be Captains: W. D. Whamond, T. L. Henderson, A. G. Stevenson, R. H. C. Pryn, B. J. Daunt, A. J. Bado, H. M. Alexander.

O. T. J. C. De H. Clayre to be temporary Lieutenant.

Officers relinquishing their commissions:—Temp. Major (acting Lieut.-Col.) R. D. Hotchkiss (granted the rank of Lieutenant-Colonel). Temporary Majors retaining the rank of Major: C. B. Dobell, J. C. Woods, C. R. Nicholson: Temporary Captains granted the rank of Major: F. D. Saner, E. S. Sowerby, R. H. Strong, P. K. McCowan, J. T. Grant (acting Major), O. R. L. Wilson, W. M. Oakden, C. C. Harrison. Temporary Captains retaining the rank of Captain: A. R. Mitchell, W. H. Orton, A. J. R. Taylor, C. G. Lees, T. Kennedy, J. Williamson, J. A. Hadfield, C. L. Herklots, W. W. Halsted, G. R. Spence, P. C. H. Ryan, G. E. Kinnersly, D. S. Cassidy, T. B. Marshall, A. W. Ritchie, J. T. Daly, G. Cock, E. G. Y. Thom, A. Macdonald, R. S. Gibson (acting Major), M. A. Milne, W. E. Procunier, V. E. Sorapure, L. Milburn, L. W. Evans, N. McA. Gregg, J. H. Jones, R. J. Harley-Mason, J. R. MacNeill, R. Williams, E. C. Bowden, A. J. Hawes. Temp. Lieut. D. C. Macaskill (retains the rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Capt. K. D. Murchison relinquishes the acting rank of Lieutenant-Colonel.

The undermentioned Captains relinquish the acting rank of Major: A. McL. Ferrie, W. J. Webster, C. E. H. Gater, W. Johnson, B. Goldsmith, C. J. B. Way, R. Nixon, H. D. Brown, A. Picken.

Capt. J. Berry resigns his commission.

Lieutenants to be Captains: P. S. G. Cameron, L. H. Bartram.

Officers relinquishing their commissions:—Capt. E. B. Jones. Captains retaining the rank of Captain: H. S. A. Alexander, I. G. Innes, F. L. Heap, O. Johnston, W. Griffiths, J. D. MacCormack, H. E. Rhodes, M. W. Geffen, J. A. C. Guy.

TERRITORIAL FORCE.

Capt. (acting Lieut.-Col.) J. Miller relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capt. (acting Major) J. B. Bate relinquishes the acting rank of Major on ceasing to be specially employed.

Capt. A. D. Kennedy is restored to the establishment.

4th London General Hospital: Capt. (Bt. Major) W. C. Bosanquet is restored to the establishment on ceasing to hold a temporary commission in the R.A.M.C.

2nd Scottish General Hospital: Capt. E. Matthew is restored to the establishment.

ROYAL AIR FORCE.

Medical Branch.—Capt. O. H. Gotch and Lieut. R. H. Turner are transferred to the unemployed list.

Dental Branch.—Capts. J. Jones and N. L. Smallbone are transferred to the unemployed list.

INDIAN MEDICAL SERVICE.

Lieut. (temp. Capt.) Jagat Ram Kochhar to be Captain.

Temp. Lieut. J. Portelli to be temporary Captain.

The King has approved the retirement of Major F. O'D. Fawcett and the resignation of Capt. Prabodh Chandra Roy.

JOHANNESBURG MEDICAL SCHOOL.—On Jan. 28th the Governor-General of the Union of South Africa laid the foundation-stone of the Medical School of Johannesburg. Mr. G. B. Steer, M.P.C., the Mayor, presided at the lunch that followed, and proposed the health of the Governor-General. Lord Buxton, in responding, remarked that his grandfather was in his day a distinguished physician, and that he (His Excellency) had often wished that he had been allowed to adopt the profession. He thought it was time that Johannesburg had its own medical school, especially as there were certain diseases peculiar to miners which required study, diagnosis, and treatment. He did not think the people of Johannesburg suffered from sleeping sickness, but they did suffer from nerves and excitability. Indeed, his experience of five and a half years in South Africa was that Johannesburg and the Reef were the storm-centres of the country. At the stone-laying ceremony Lieutenant-Colonel W. Dalrymple, acting chairman of the School of Mines, said it was hoped to provide classrooms, and, if necessary, clinical lecture theatres, for the departments of anatomy, physiology, pharmacology, bacteriology, and pathology. Lord Buxton said that he was glad to know that the medical school would be open on equal terms to men and women.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 3RD.

Fleet Surgeons' Pensions.

Sir CLEMENT KINLOCH-COOKE asked the First Lord of the Admiralty whether he was aware that some 25 surgeon-commanders (fleet surgeons) had been placed on the retired list after reaching the age of 55 or completing 30 years' service, and notwithstanding that many of them were called up in August, 1914, and served throughout the war, some as surgeon-captains, their retired pension was only 10 per cent. higher than the rate fixed for surgeon-commanders 40 years ago, and if he would consider the possibility of increasing the pensions of surgeon-commanders called up for service during the war, as has been done in the case of officers in other branches of the service.—Mr. LONG replied: A number of surgeon-commanders (fleet surgeons) who retired before the war on reaching the age of 55 or on completing 30 years' service were called up during the war and served in the rank they held on the retired list, whether surgeon-captain or surgeon-commander. The exact number could not, however, be ascertained without examining each case separately. While re-employed such officers received, in addition to the full pay and allowances of their rank, a bonus of 25 per cent. of their full pay in lieu of counting the additional time served towards increase of retired pay. Under these conditions of service they would not have been entitled to increase of retired pay, but in accordance with the general arrangement made in the case of retired officers who served in a service capacity during the war, their retired pay was re-assessed on the new scale at the rates applicable to their age and rank at the date they originally retired. In the majority of cases the rate of retired pay was thus raised from £547 10*s.* to £600 per annum. The procedure adopted in re-assessing the rates of retired pay of surgeon-commanders called up for service in the war has been exactly the same as that adopted in the case of officers in other branches called up for service. It is true that the increase of retired pay is proportionately not so great in the case of the surgeon-commanders in question as in the case of certain other ranks, but some dissimilarity in this respect is inherent in any scheme which is framed to put the different branches of the Naval Service as far as possible on the same basis.

The Future of Poor-law Infirmaries.

Lieutenant-Colonel FREMANTLE asked the Minister of Health if he was aware that the present uncertainty as to the future utilisation of existing Poor-law infirmaries was hampering boards of guardians in their endeavours to make adequate provision for the needs of the sick either by way of extension or improvement of their institutions; whether, in the interests of an early reorganisation of health services, he would inform boards of guardians what was the policy of the Ministry with regard to these particular institutions and the use to which they were destined to be put under the new scheme of health services which was contemplated; and whether he was aware that the various health authorities in London and boards of guardians were particularly handicapped in making proper institutional provision for tuberculous persons owing to the failure of the Ministry as yet to carry into effect the declared policy of the Government with regard to the Poor-law.—Dr. ADDISON replied: Yes, Sir; but the matters referred to by the honourable Member involve questions of local government and other subjects of the first importance that can be dealt with only by legislation; and it is obviously necessary that I should lay proposals before Parliament and obtain its sanction thereto before I could properly adopt towards local bodies the attitude suggested in the question.

National Physique and Housing.

Mr. GRATTAN DOYLE asked the Minister of Health if his attention had been called to the report of the National Service Medical Boards regarding the defective physique of great numbers of men who were examined for military service; what action he proposed to take to improve the health and physique of the nation; and, seeing that the shortage of proper housing accommodation was one of the most serious contributing causes, what progress had been made during the last three months to deal with such shortage.—Dr. ADDISON replied: Yes, Sir; but it is quite impossible to set out within the limits of a reply to a Parliamentary question that very large variety of ways in which the causes and the treatment of disease are to be dealt with. In reply to the concluding paragraph of the question I may say that the number of houses for which the acceptance of tenders has been approved has increased during the last three months from about 12,000 to about 60,000.

Poor-law Infirmaries and Voluntary Hospitals.

Mr. BRIANT asked the Minister of Health if he would take steps to coördinate the work of the Poor-law infirmaries and voluntary hospitals so that persons requiring treatment should be sent direct to the most suitable institution, and should thus be saved the delay and danger of seeking admission at two or more institutions before obtaining the necessary treatment.—Dr. ADDISON replied: I am aware of the case which the honourable Member has in mind, and I will consider the question; but I have no jurisdiction over voluntary hospitals.

Mr. BRIANT: Does the right honourable gentleman not realise that no effective medical administration in the country can be obtained if he does not draw a distinction between Poor-law infirmaries and hospitals?—Dr. ADDISON: I am not quite sure that any effective administration would maintain that distinction.

Mr. BRIANT: Will the right honourable gentleman introduce legislation to make it effective?—Dr. ADDISON: Nobody is better acquainted with the complications of this subject than my honourable friend.

Middle Classes and Sickness Treatment.

Colonel NEWMAN asked the Minister of Health whether he was aware that, owing to heavy taxation and the increase in the cost of living, large numbers of the middle classes were unable to afford the expense of treatment and nursing in their own homes should illness overtake them; whether he was aware that they were unable and unwilling to obtain admission to and further overcrowd the large hospitals maintained by voluntary contribution for the pre-war poorer classes of the community; and what action did he propose to take to meet their necessities.—Dr. ADDISON replied: I am fully aware of the present pressure upon the voluntary hospitals, and the general question of the provision of hospital treatment has for some time past been engaging the attention of the Medical Consultative Council, from whom I am expecting a report shortly. I am not yet in a position to make any statement.

The Capital Value of Panel Practices.

Major PRESCOTT asked the Minister of Health whether he was aware that when the Regulations 16/1/C of the Government Insurance Act came into operation medical panel practitioners would be deprived of the advantage of the capital value of their practices; whether he was aware that a promise was given in 1913 to the effect that such an interest would be assured to the medical practitioner; whether he was aware that panel practitioners were apprehensive of the effect of these regulations upon the disposal of their practices; and if he would take into consideration the expediency of reviewing the situation.—Dr. ADDISON replied: I am not aware that any promise has been given in 1913, or indeed at any time, of the character indicated in the question. I am aware that some insurance practitioners are apprehensive—unnecessarily so—of the effect of the regulations referred to, and I am sending my honourable friend a copy of a reply which I have caused to be addressed to representations made to me on the subject on behalf of the Conference of Panel Committees.

THURSDAY, MARCH 4TH.

Salaries of Pensions Medical Officers.

Captain LOSEBY asked the Pensions Minister if the salaries of medical officers attached to the Ministry of Pensions hospitals were in some cases much in arrears; and if there was any reason why they should not be paid up to date.—Sir L. WORTHINGTON-EVANS replied: I have made inquiries, and am informed that the salaries of all medical officers who have been duly appointed to the staff of the Ministry are punctually paid at the end of each month. In some cases there has been delay in the formal appointment of medical officers who have taken up duty in advance of appointment and are thus left temporarily without pay. I am inquiring into this.

Dora Restrictions and Dublin Medical Services.

Captain REDMOND asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that the recent Order under the Defence of the Realm Act in Dublin, whereby citizens were prohibited from being out of doors between 11.30 P.M. and 5 A.M., was inflicting serious hardship on the population, especially the poorer section in cases requiring medical and hospital attention; whether the nurses in many of the Dublin hospitals had declined to attend calls, and, as a consequence, maternity and other hospital cases were without the services of nurses and medical practitioners; and whether, in view of the grave consequences to which innocent and suffering people were being subjected, he was prepared to take steps to suspend the Order.—Mr. MACPHERSON replied: No complaints have reached me in this matter. From inquiry at the Dublin hospitals I have ascertained that in no case has there been a refusal to send out nurses in maternity cases. In two

cases (Coombe Hospital) where nurses (permits not yet having been obtained) were required during prohibited hours the police escorted the nurses to their destination. The hospital authorities have since applied for permits for doctors and nurses. I believe, as a result of the inquiries made at hospitals, that the new regulations are rather welcome than otherwise to the staffs. There is a greater sense of protection when called out at night, and the only real inconvenience is that caused by the action of the corporation in extinguishing the street lamps at 11.30 P.M., thus leaving the city in complete darkness at night.

Captain REDMOND: Is the right honourable gentleman not aware that the matrons of all the principal hospitals in Dublin, including the Maternity Hospital in Holles-street and the Coombe Hospital, have stated publicly through the press that they will refuse to allow any of their nurses out between 12 midnight and 5 A.M.?—Mr. MACPHERSON: I cannot add anything to the answer I have given, one short sentence of which says: "The hospital authorities have since applied for permits for doctors and nurses."

Captain REDMOND: Is it not a fact that some poor women in a very advanced stage of pregnancy were not able to reach the hospital owing to these iniquitous restrictions?—Mr. MACPHERSON: I am not aware of that. I am convinced of this, that in cases of that kind the Government would be prepared to do everything to assist.

Reorganisation of Local Health Services.

Major HILLS asked the Minister of Health whether, now that his Ministry was in working order, he intended to suggest any, and what, steps to reorganise the local health services.—Dr. ADDISON replied: Yes, Sir; the matter is engaging my earnest attention, but I am expecting to receive shortly the recommendations of the Statutory Consultative Council on Medical and Allied Services, which I have undertaken to publish when available, and which must, of course, be carefully considered before the steps referred to in the question are decided upon.

Small-pox.

Sir A. YEO asked the Minister of Health if his attention had been called to a very serious state of affairs in connexion with the ex-Government stores being dumped at Bell Wharf, Bromley-by-Bow, E., and the reported death of one woman working in the wharf, and the isolation of five other persons from the same place, one of whom was in the service of the medical officer of health of the Poplar council, and what steps he proposed to take, if any, to rid the neighbourhood of the cause of the outbreak, as the matter was causing much alarm to the inhabitants.—Dr. ADDISON replied: Yes, Sir; I am aware of this case, and the Ministry in conjunction with the sanitary authorities has been taking active steps for some time past in endeavouring to check the spread of infection from the different centres to which it has been traced from the source indicated amongst, I regret to say, a population largely unvaccinated.

Sir A. YEO: Will the right honourable gentleman take steps to have this dump burned in order that the disease may be stamped out? Otherwise there will be more outbreaks and more serious trouble for the Health Department.—Dr. ADDISON: The value of the stores dumped is about a quarter of a million. The small-pox has now spread to various other places in the district, so that burning the dump would not remove the danger.

Sir A. YEO: Is not the life of this poor woman worth more than a quarter of a million pounds?—Dr. ADDISON: It would not restore the woman to life to burn the dump.

Sir A. YEO: But it would save others from being buried.

Decisions on Second Pensions Report.

In reply to Captain COOTE and Sir M. BARLOW, Sir L. WORTHINGTON-EVANS stated that the Government had decided to accept the majority of the 49 recommendations made in the Second Report of the Select Committee on Pensions. In particular it had been found possible to accept the whole of the recommendations as to the disability scales of pay of regular and temporary officers. The recommendations with regard to officers' widows' pensions, the pensions and allowances in respect of children, and the loading up of pre-war earnings for the assessment of alternative pensions had also been accepted with slight modifications. With regard to the recommendations concerning the dependents of non-commissioned officers and other ranks the Government had accepted the proposals to increase the limits of pre-war dependents' pension and the special need pension to 20s. a week, and were prepared to give the Special Grants Committee discretion to deal with certain cases of special hardship, as recommended by the Select Committee. The Government were, however, unable to accept the Committee's recommendation that all pre-war dependency and special need pensions should be scaled up by an extra 13 per cent., but hard cases would be met partly by a revision of the existing need scale and partly by the Special Grants Committee. The estimated cost of the recommendations made by the Committee, including the continuance of the 20 per cent. bonus was £3,000,000. The estimated cost of the improvements accepted by the Government was £1,900,000. The work of re-assessment would be carried out as rapidly as possible, and payment would be made as from April 1st, with arrears from that date. In a detailed statement which the right honourable gentleman circulated later it is announced that the suggested increases for matrons and nurses are approved. In regard to nurses' dependents the proposals made to the Treasury by the Ministry of Pensions on behalf of the Special Grants Committee had now been sanctioned. Most civilian nurses were already dealt with under the dispensing warrant, but if existing powers were found to be insufficient further consideration would be given to cases of hardship. The General Service Section V.A.D. were not nurses, but women engaged on ancillary duties. The question whether compensation could be provided for them would be considered by the War Office.

MONDAY, MARCH 8TH.

Insurance Practitioners' Remuneration.

In reply to a question from Sir PHILIP MAGNUS, the MINISTER OF HEALTH stated the result of the arbitration in respect of medical men working under the National Insurance Act, which has already been published in the press (see p. 615 of this issue of THE LANCET), adding, "the utmost goodwill exists on both sides and a sincere appreciation of the impartiality and service of the arbitrators." To a further question, inquiring the cost to the Exchequer, Dr. ADDISON answered that these details would be supplied in connexion with the National Health Insurance Bill shortly to be introduced.

Ireland and the Insurance Bill.

Captain REDMOND asked the Minister of Health if he would state whether the National Health Insurance Amendment Bill was to be applied to Ireland.—Dr. ADDISON replied: The answer is in the affirmative.

Medical Treatment of Children.

Sir CYRIL COBB asked the Minister of Health whether it had been found in practice that the duty imposed under Section 1 of the Local Education Authorities (Medical Treatment) Act, 1909, of recovering a charge for treatment deterred parents from obtaining such treatment for their children; whether he was aware that in certain areas the Act had become a dead letter; whether, in view of this fact, it was the intention to amend or repeal the Act; and, if it was not the intention to amend or repeal the Act at an early date, what action should be taken by an authority which was anxious to comply with the section but found that the making of any charge which would justify the cost of collection had a tendency to deter parents from obtaining the necessary treatment for their children.—Dr. ADDISON replied: I have received no representations of the nature referred to in the first part of the question; in any case any amendment affecting the principle of the Act could only properly be considered in close connexion with the general question of the organisation of public health services, on which, as I have before indicated, I am not yet in a position to make any statement.

Medical Examination of Teachers.

Lieutenant-Colonel HURST asked the President of the Board of Education whether he would consider the expediency of relieving teachers who enlisted in the army as A 1 men and received wounds on service from medical examination and from having to pay a fee for such examination, in order to place them at no disadvantage to non-serving teachers in respect of the death gratuity under the School Teachers (Superannuation) Act, 1918.—Mr. H. LEWIS (Parliamentary Secretary to the Board of Education) replied: My right honourable friend is afraid that he is debarred from adopting the honourable Member's suggestion by the provisions of Section 3 (1) of the Act. Teachers who served with the forces are not in a position different from that of other teachers as regards medical examination and the payment of the fee for such examination.

TUESDAY, MARCH 9TH.

Hospitals for Uncertifiable Mental Cases.

Mr. LAWSON asked the Secretary for War if he would state how many houses or hospitals were provided under his department for uncertifiable cases of loss of mental balance occurring among soldiers; where these houses were situated; what was the accommodation in each; and whether it was still the policy of the War Office to retain these cases of nerve strain under military control in so-called war hospitals staffed by lunacy officials and lunacy attendants.—Mr. CHURCHILL replied: I assume the honourable Member is referring to accommodation for cases of mental disorder. Soldiers suffering from nerve strain are not sent to war (mental) hospitals unless the conditions of the patient constitutes actual mental disorder, but are treated in neurological hospitals or neurological sections of general hospitals. There

is one hospital for cases of mental disorder, viz., Lord Derby's War Hospital at Winwick, Warrington. There are 1000 beds in the hospital and the number of patients at present is 741. It is still the policy to retain such cases in the hospital until they are cured, if this seems likely to occur. Otherwise they are discharged to the care of their friends or to appropriate institutions.

Deafness through Shell Shock.

Mr. HOUSTON asked the Secretary for War whether he could state the number of soldiers who during the war had become totally deaf through shell shock or other causes; and whether institutions would be provided for these men to be taught lip-reading and useful occupations on the lines of St. Dunstan's Hospital for the Blind, so that they might be enabled to earn their livelihood.—Sir L. WORTHINGTON-EVANS replied: The number of the totally deaf cannot be stated, but approximately 30,000 men have been pensioned for deafness of greater or less degree. Medical boards are instructed to recommend a course of tuition in lip-reading where the degree of deafness is such as to render this desirable. Lip-reading classes are held in London at the Ministry's aural clinic (28, Park-crescent, Regent's Park) and at 30 other centres throughout the country.

Sanatoriums for Nerve Strain.

Mr. LAWSON asked the Pensions Minister if he would state how many houses or sanatoriums were provided under his department for ex-soldiers disabled through nerve strain, but whose loss of mental balance was not such as to necessitate certification; and whether he would take steps to secure that, for the cheer and encouragement of such patients, the voluntary houses which were so greatly needed should be kept wholly apart from lunacy administration and unconnected with the Lunacy Board.—Sir L. WORTHINGTON-EVANS replied: There are 12 special institutions with accommodation for nearly 1500 patients available for the treatment of neurasthenic cases. A considerable number of beds are also reserved for such cases at other Ministry hospitals. These institutions are all under the direct control of this Ministry and are unconnected with lunacy administration.

Captain REDMOND: Are there any of these institutions in Ireland?—Sir L. WORTHINGTON-EVANS: As my honourable and gallant friend knows the Irish law on the subject is not the same as here. We have got the Ministry institutions in Ireland, although I think the accommodation is not sufficient.

Protective Health Services.

On a Supplementary Estimate in Committee of Supply of £100 for the Ministry of Health, Dr. ADDISON, Minister of Health, explained to the Committee what he described as the "protective" services which came under the jurisdiction of his department. There was £100 for grants to port and riparian sanitary authorities, which was required for the improvement and extension of the machinery to prevent the importation into this country of any of the diseases which were ravaging other parts of the world. His aim was to erect a protective screen round this country, and he had no doubt that this £100 for which he was asking would in the course of the next few years grow into thousands of pounds. The additional sum required for child welfare was £130,000. They had opened 400 new child welfare centres this year. Midwifery services required great development, but they had during the past year supplied these services for a population of 200,000. They had, however, gone nothing like far enough yet. They had also made progress in the provision of maternity homes, which were badly needed all over the country. During the past year they had established 50 of these homes, and it was the intention of the Department to go on establishing more. The infant mortality rate of last year was the lowest on record. It had now reached 89 per 1000. But it ought to be brought down to 50. The improvement nevertheless was significant. The estimated saving (amounting to £815,090) was not due to bad estimating, but to the fact that on the whole there had been better health among insured persons, which he attributed to better wages and employment. In the main that reflected an improved national health, and if they got an improved service by the aid of the referees he sincerely hoped that they would see a better figure next year. The estimate was agreed to.

Dr. E. Colston Williams, the newly appointed medical officer of health for Glamorgan, recently opened an interesting discussion at a branch meeting of the Society of Medical Officers of Health upon the Working of the Mental Deficiency Act and School Work. He advocated neighbouring authorities combining in order to provide economically the needed institutions. His suggestion received strong support, and a resolution was passed to advise that no premature steps be taken by local authorities before the whole needs of the Principality are ascertained and carefully considered.

Medical News.

MEDICAL RECORDS UNDER NATIONAL HEALTH INSURANCE.—The Minister of Health and the Scottish Board of Health have appointed an Inter-Departmental Committee to consider and advise them as to the form of medical record to be prescribed under the conditions of service for medical practitioners contained in the new Medical Benefit Regulations, having due regard to the clinical purposes (including the remedial value to the patient of maintaining a suitable record of his case), as well as to the administrative and the statistical purposes which such records may be adapted to serve. The Committee consists of the following members:—

Sir Humphry Davy Rolleston, K.C.B., M.D., F.R.C.P. (Chairman),
Emeritus Physician, St. George's Hospital; President, Royal Society of Medicine.

H. B. Brackenbury, M.R.C.S., L.R.C.P.,
Chairman, Insurance Acts Committee.

J. Brownlee, M.D.,
Director of Statistics, Medical Research Committee.

H. G. Dain, M.B.,
Chairman, Birmingham Insurance Committee.

J. R. Drever, M.B.,
Scottish Medical Secretary, British Medical Association.

J. Cranford Dunlop, M.D.,
Superintendent of Statistics, General Register House, Edinburgh.

C. E. S. Flemming, M.R.C.S., L.R.C.P.,
Member, Wiltshire Insurance Committee.

A. Fulton, M.B.,
Vice-Chairman, Nottingham Insurance Committee.

M. Greenwood, M.R.C.S., L.R.C.P.,
Medical Officer (Medical Statistics), Ministry of Health.

R. W. Harris,
Assistant Secretary, Ministry of Health.

H. W. Kaye, M.D.,
Director of Medical Services, Ministry of Pensions.

J. C. McVail, M.D.,
Scottish Board of Health.

H. Meredith Richards, M.D.,
Welsh Board of Health.

T. H. C. Stevenson, C.B.E., M.D.,
Superintendent of Statistics, General Register Office.

S. P. Vivian,
Deputy Registrar-General.

J. Smith Whitaker, M.R.C.S., L.R.C.P.,
Senior Medical Officer, Ministry of Health.

The joint secretaries of the Committee are G. F. McCleary, M.D., and A. E. Joll, of the Ministry of Health, Whitehall, S.W. 1.

Queen Alexandra will unveil the Nurse Cavell Memorial on Wednesday, March 17th.

Dr. J. C. McWalter has been appointed High Sheriff of Dublin.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting, held on March 1st, the following were admitted (after examinations) as Fellows: Dr. Andrew Allison (Ibrox), Dr. Thomas Blackadder Gilchrist (Johannesburg), Dr. John Clark Middleton (Glasgow), and Dr. Robert Cecil Robertson (London). At the same meeting Dr. Thomas Forrest, of Glasgow, presented to the Royal Faculty a case of surgical instruments which had been the property of and were used by the late Lord Lister while he was a surgeon in the Glasgow Royal Infirmary. Dr. A. Freeland Fergus, President, on behalf of the Fellows, accepted the gift with very great pleasure, and stated that it would be placed in the archives of the Faculty.

UNIVERSITY OF WALES: MEDICAL FACULTY.—The suggestion has been made that in future the King Edward VII. Hospital, Cardiff, should become (1) a centre for clinics, venereal, psychiatric, tuberculosis, school, maternity and child welfare, in addition to ordinary out-patient work; and (2) a clearing station, its beds being devoted to urgent and major cases. Another hospital situated outside the town—on a site known as the Rookwood Estate at Llandaff—it is proposed, should accommodate cases passed on to it and also simple and ordinary medical and surgical cases. Much is to be said for this plan, which, it is thought, would appeal to the Welsh Ministry of Health, who desire each general practitioner to have access to a medical institute. Under this scheme the major beds in the centre would be served by the consultants, while the outside hospital would become a medical institute. Further, this plan would allow for almost indefinite expansion in the future, as Rookwood is a beautiful estate comprising some 30 acres excellently placed for fresh air and sunshine.

THE OSLER MEMORIAL.—A distinguished gathering met at the University Museum, Oxford, on March 6th to decide on the form of a memorial to the late Regius professor of medicine. Three resolutions were proposed and approved. The first, by Sir Clifford Allbutt, that the distinguished services of the late Sir William Osler were deserving of a permanent memorial in Oxford. The second, by Sir William Church, that the most appropriate form of memorial would be an Osler Institute of General Pathology and Preventive Medicine. The third, by the Dean of Christ Church, to appoint a committee and issue an appeal for funds. Professor J. A. Gunn intimated that a provisional committee, consisting of Professor W. H. Welch (Baltimore), Professor Harvey Cushing (Boston), Professor F. Billings (Chicago), President G. R. Butler and Professor Walter B. James (New York), was coöperating in America, and a similar arrangement in Canada was contemplated.

NO. 3 CASUALTY CLEARING STATION.—With reference to the announcement in THE LANCET of Feb. 28th the first reunion dinner will take place at Jules's Hotel, Jermyn-street, London, W., on Saturday, March 20th, at 7.30 P.M.

NO. 5 GENERAL HOSPITAL, LONDON.—It is proposed to hold a reunion dinner of officers who were attached to No. 5 General Hospital, B.E.F., in London on Saturday, April 10th. Those who wish to attend are asked to write to Dr. G. T. Loughborough, 3, Lexham-gardens, Kensington, W. 8.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN: ANNUAL DINNER.—The annual dinner of past and present students and friends of the school, now revived after the war period, is being held to-day (Friday) at the Abercorn Rooms, Liverpool-street, at 7 for 7.30 P.M.

GREAT NORTHERN CENTRAL HOSPITAL.—A successful drawing-room meeting was held by Mrs. Perronet Sells at "Beechwood," Hampstead Lane, Highgate, on March 8th in connexion with the Ladies Association of the Great Northern Hospital. In response to an appeal for new members 38 ladies joined the association, and the sum collected for the hospital among the guests amounted to £32 8*s*. 6*d*.

CHELSEA CLINICAL SOCIETY.—A meeting of this society, which has now resumed its activities, will be held on Tuesday, March 16th, in St. George's Hospital Medical School, at 8.30 P.M., when a discussion will be opened by Dr. D. M. Barcroft on "Is Asthma a Disease of the Chest?" Sir Thomas Horder, Dr. Leonard Williams, and Dr. Hernaman Johnson are expected to continue the discussion.

VENEREAL PREVENTION IN PORTSMOUTH.—After considering a special report on the prevention of venereal diseases drawn up by the medical officer of health, Dr. A. Mearns Fraser, the Portsmouth health and housing committee passed a resolution urging the council—

"to empower the committee at once to take the necessary steps to disseminate a knowledge of the methods of prevention indicated in the report among the male population of the borough, and to impress upon men their duty to the community in this matter."

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—At the last pathological meeting of this society, held at the Medical School, Leeds, a large number of specimens were exhibited and the following papers read:—Dr. W. MacAdam: The Practical Application of the Newer Methods of Chemical Analysis to Clinical Medicine. An account was given of recent advances in the methods of physiological chemistry, especially in connexion with blood and urine analysis. The lines along which estimation of the sugar content of the blood may assist diagnosis and treatment of the various types of glycosuria were indicated, whilst the additional information thus gained, as compared with that obtained from urinary examinations alone, was discussed. The newer tests for the estimation of renal function were described, an account being given of the findings obtained from estimations of the urea content of the blood, considered along with McLean's urea-concentration test, in various medical and surgical conditions of the kidneys.—Dr. J. W. McLeod: A Suggested Criterion of Virulence amongst Streptococci. After dealing with the differences of opinion which have arisen as to the relation which hæmolytic power bears to the virulence of streptococci, Dr. McLeod pointed out that experiments on rabbits show that the power of streptococci to produce hæmolytic toxin, when grown on undiluted rabbit serum as a culture medium, is closely related to their virulence for rabbits. Adopting the same criterion with human serum, it has been found that a small number of strains can be distinguished as presumably of high virulence. The two strains which were indicated by this criterion as most virulent both came from cases of acute streptococcal meningitis.

BIDEFORD (DEVON) HOSPITAL.—It has been decided to make extensions and improvements at the Bideford Hospital at an estimated cost of £4000. £1300 have already been promised, and the committee thinks that the requisite amount will be raised.

TAVISTOCK (DEVON) HOSPITAL.—At the annual meeting of the friends of this institution, held on Feb. 25th, it was decided that all medical practitioners within the area of the Tavistock union should, when possible, attend their own patients when resident in the hospital.

EXETER DISPENSARY.—The annual meeting of the subscribers to this institution was held on Feb. 25th. The medical report stated that 2213 patients had been treated during the year. It was reported that the charity was having an adverse balance of about £500 every year. Dr. T. R. C. Whipham was elected honorary physician, and Dr. J. S. Steele-Perkins and Dr. G. P. D. Hawker were elected on to the honorary consulting staff.

UNIVERSITY OF BRISTOL.—The following candidates have passed the Third Examination for the Diploma in Dental Surgery: Norman Harry Bodenham and Kenneth George Hyland.

BRISTOL MEDICAL MISSION.—At the annual meeting of the subscribers to this institution, held last week, it was reported that during the past year 3596 patients had been treated. The income was £1137 and there remained a favourable balance of £65.

THE VOLUNTARY HOSPITALS OF BRISTOL.—The movement towards union between the voluntary hospitals of Bristol is developing. An apparently authoritative summary in the local press has stated that a council of all the hospitals would be set up on a basis of proportional representation, to include also representatives of the University Council and of the honorary staffs. A financial amalgamation is also proposed. The wishes of past benefactors will in all cases be respected, and the house committees of the several hospitals will continue to act as at present. At the annual meeting of the General Hospital, on March 8th, the chairman of committee, Mr. Herbert M. Baker, said that these proposals were still under discussion by the committee set up to consider the whole situation, and that if they were approved by that committee they would then be referred to each of the hospitals concerned for consideration and report. Mr. George A. Mills, the President of the hospital, spoke in favour of the principle of coöperation between hospitals, and suggested to the Lord Mayor, who was in the chair, the suitability of a fund for extinction of debt, and provision of endowment of the hospitals as a war memorial for Bristol. That indefinite delay in the decision as to amalgamation is undesirable is suggested by a remark of Mr. William Garnett, when presiding at the meeting of the Children's Hospital on March 2nd, to the effect that building schemes for a new out-patient department, a nurses' home, and a block for the treatment of surgical tuberculosis had been postponed pending a settlement of the proposals for amalgamation. It is presumably on account of the impossibility of waiting long for the provision of these and other premises that a time-limit is suggested. Each hospital is to be asked to arrive at a decision on its attitude toward a policy of union before May 31st.

HOSPITALS AND PAYING PATIENTS.—"One other need of the future—nay, rather of the immediate present—should be mentioned, and that is provision for the reception of patients able to contribute towards the cost of their treatment." This is an excerpt from the report presented at the annual Court of Governors of the Royal Sussex County Hospital at Brighton on Feb. 25th, and created a discussion tending to show that the governors consider the course a wise one to pursue. No actual resolution was submitted, but Mr. Scrase Dickins said the class they used to regard as the sick poor were now in many respects the most well-to-do of the community, while others who hitherto were in a superior position found it almost impossible to make both ends meet, and in time of sickness were in exceptionally unfortunate circumstances. The poorest were provided for, but there was no provision for the intermediate class, and it was very difficult for the board to decide who should be admitted as patients. Another speaker, in voicing entire sympathy with the suggestion, expressed himself in this way—that there was no "half-way house" for the people of Brighton and Hove. From the annual report it was gathered that the normal number of beds (202) had been increased temporarily to 218 in order to cope with the number of patients, the in-patients numbering 2956. Out-patients totalled 5561, and 4189 casualties were treated. The total income for the year was £23,188 3*s*. 3*d*., and the expenditure £28,608 11*s*. 2*d*., leaving a deficit of £5420 7*s*. 11*d*.

THE annual general meeting of governors of the Royal Dental Hospital of London, Leicester-square, will be held at the hospital on Thursday, March 25th, at 5 P.M.

HOSPITAL CONDITIONS IN LIVERPOOL.—It was recently pointed out in Liverpool that the upkeep of the hospitals must no longer be considered a matter of charitable benevolence, but the duty of all who participate in their benefits. Directly or indirectly every member of the community does participate in these benefits, but a study of available local subscription lists show that only a very small proportion of the beneficiaries lend their aid.

Liverpool Royal Infirmary.—The 171st annual meeting of the governors of the infirmary was held on March 5th. Alderman Crosthwaite, the retiring President, in submitting the annual report, mentioned the fact that in 1846, during the presidency of his father, the remark was made that "the advance in the price of articles of food had added considerably to the expenses of the institution." The same might be said with added force of the present situation. During 1919 the in-patients numbered 4618 and the out-patients 32,138. It was proposed to add an out-patients' clinic to the School of Tropical Medicine, which recorded 35,795 attendances last year, while the massage department in connexion with orthopædics had 41,858. He made a special appeal that all in receipt of higher wages should assist the committee in raising funds for the increased salaries of the nurses, which were now equal to the standard recommended by the College of Nursing. The honorary treasurer, in submitting the accounts, pointed out that but for a timely and anonymous donation of £20,000, received last December, the committee would have been placed in serious financial difficulties. There was still an adverse balance of £4712. Mr. H. Wade Deacon saw hope for the financial future of such institutions in the fact that the British Red Cross and St. John Association had resolved to transfer their money-raising energies from war to peace. The suggestion recently made in London of charging hospital patients 10*s.* weekly for food would require serious consideration before adoption in the provinces. He believed that the usefulness and economy of hospitals could be increased by a system of coördination under which acute cases would not be kept in a fully equipped hospital nearly so long after operations as at present, but would soon be removed to a supplemental hospital and thence to a convalescent home if necessary. The report and accounts were adopted, and Dr. Richard Caton, whose association with the infirmary dates from 1886, was elected President.

Royal Southern Hospital.—Under the presidency of the Lord Mayor the annual meeting of this institution was held on March 8th. The seventy-eighth annual report for 1919 showed the number of in-patients to have been 2340, as compared with 2176 in 1918, while the out-patients numbered 15,880 with 70,593 attendances, as compared with 14,905 and 61,213 respectively. All the special departments have been fully utilised and the attendances have increased considerably. In the venereal diseases department the number of in-patients treated during the year was: males 66, females 140. New V.D. out-patients numbered: males 305, females 115, and the total attendances were 1229 males and 940 females. The ordinary expenditure amounted to £29,952, an increase of £3033. The ordinary income fell far short of the needs, but during the year a large amount of extraordinary income amounting to £20,707, of which £13,335 was due to legacies and £3550 to special donations, had come to hand and had relieved the financial strain. A debt of £4488 is still owing to the bank and other creditors. With a view to shortening the hours of duty of the nursing staff the committee has decided to extend the nurses' home to give accommodation to 21 additional nurses. The new building, costing approximately £8500, is now approaching completion. The salaries of the nurses have also been revised and raised to a standard equal to the average paid throughout the country. Together with its annual report the committee is issuing a special appeal which embodies many interesting facts. Whereas in 1910 the ordinary income was £9918, and the ordinary expenditure £12,462, the income in 1919 (less the sum paid by Government in respect of the treatment of wounded and disabled soldiers and sailors) was £14,026, and the expenditure £29,952. Although the cost of commodities, maintenance, and so forth has risen by £17,489, the additional amount subscribed towards this increase has been only £4107. The committee is desirous of bringing these facts home to every wage-earner and employer. The £46,000 raised by the Lord Mayor's appeal in Liverpool compares very unfavourably with the amount raised in other cities in response to similar appeals. Cardiff has raised close on £95,000, and Leeds, by its employers' contributory scheme, is anticipating an additional £25,000 per annum for hospital maintenance. The names of the makers of war fortunes find their way but slowly into the subscription lists, and the working man, although his wages have increased, has not proportionately increased his donations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN-SQUARE.—The annual general meeting of governors will be held at the hospital on Tuesday, March 23rd, at 4.30 P.M.

PLAGUE ON A JAPANESE LINER.—The Ministry of Health announces that the case of plague occurring on the s.s. *Alps Maru* in the Port of London, announced on Feb. 19th, was followed by a further fatal case among the crew whilst the vessel was in the port. The patient was removed to the Port Sanitary Authority's isolation hospital on March 4th, and died there the next day. The portion of the cargo destined for London was discharged into lighters and barges, and the necessary precautions are being taken concerning it. The ship was disinfected as far as practicable, but the holds which still contained cargo could not be dealt with. The vessel left the Port of London on March 6th.

THE PEOPLE'S LEAGUE OF HEALTH.—In connexion with the league the Lord Mayor of London will preside at a meeting of provincial mayors to be held at the Mansion House on May 11th, when members of the medical council of the league will urge on all the boroughs and counties the duty to take up the task of raising the general health standard and lessening the deplorable mortality from preventable disease.

INFLUENZA IN ZURICH.—A sharp epidemic of influenza occurred in Zurich (population 210,000) in February, the total number of cases medically reported between Jan. 18th and Feb. 28th being 11,864. Probably an equal number remained unreported; 2210 of the notifications referred to children. The deaths numbered 166, mostly ascribed to pneumonia. An epidemic of meningitis lethargica coincided with that of influenza: 51 cases with 18 deaths, a high case-mortality. The epidemic is now (March 7th) rapidly declining.

FINANCIAL CONDITION OF NORFOLK HOSPITALS.—There is a distressing monotony about the annual reports of many Norfolk hospitals now being published. In all cases the expenses have vastly increased, with no corresponding increase of subscriptions and donations. The artisan classes who have made so much money during the war do not seem yet to have recognised their obligations towards the hospitals, and the ordinary subscribers have not, as a rule, increased their contributions to make up for the falling value of money. The Jenny Lind Hospital for Children in Norwich has to face this year a deficit of £2054 15*s.* 4*d.* The committee is also asking for a sum of about £6000 to provide further accommodation for its nursing staff, which will have to be increased owing to the curtailment of working hours. During 1919 the number of patients admitted to this hospital was 868, the daily average number of beds occupied was 54·8, and the number of operations 443. In the out-patient department the number of new patients was 2464, the number of attendances 13,461, and the number of operations 355. An X ray and electrical massage department has been opened within the last few months and Dr. A. J. Cleveland has been appointed physician in charge.

Another Norfolk hospital appealing for funds is the West Norfolk and Lynn Hospital, King's Lynn. Last year the expenditure exceeded the receipts by about £1200, and the board pointed out that, as each in-patient cost as a rule £9, the present rate of subscription was hopelessly inadequate; an appeal was made to all residents in the area served by the hospital to increase their contributions in proportion to the increased cost of commodities and of all forms of labour. The number of in-patients treated in the hospital in 1919 was 575; out-patients, 266; dental cases, 162; casualties, 763; operations, 439; and deaths, 48. There was a considerable increase in the number of in-patients and operations over the preceding year, but a diminished number of out-patients. The hospital board considered that to make the hospital efficient and up to date three distinct improvements were absolutely necessary—viz.: (1) a nurses' home; (2) an out-patient department equipped on modern lines; and (3) a self-contained laundry. It was resolved, at a special meeting of the governors held on May 13th, 1919, that a salaried surgical specialist should be appointed to be responsible for all the surgical work of the hospital. This appointment was offered to Mr. C. E. S. Jackson, who took up his new duties on Oct. 1st. Mr. C. T. M. Plowright was appointed honorary consulting surgeon, and Dr. J. R. Kingdon and Dr. W. B. Wedgwood continued to act as honorary physicians and Mr. S. A. T. Coxon as honorary dental surgeon. At the request of the Ministry of Pensions a clinic was organised in September for the treatment of men partially disabled in the war, and Miss Partridge was appointed masseuse. Forty men in all had received and benefited much by this treatment, and it was now found necessary to employ a second masseuse.

Appointments.

CARLILL, H., M.D., B.Ch. Cantab., has been appointed Physician to the Westminster Hospital.

FENTON, J., M.D., D.P.H., Medical Officer of Health for the Royal Borough of Kensington.

Certifying Surgeons under the Factory and Workshop Acts: ANGLIM, W. J., L.R.C.P. & S. Irel. (Duncannon); FOUNTAIN, E. D., M.R.C.S., L.R.C.P. Lond. (Great Wakering); COX, E. H., M.B., Ch.B. Vict. (Rochdale); MCKENNA, J. H., L.A.H. Dub. (Ballylynan); ROBERTSON, J. D. (Kidwelly); SHEEDY, T. (Aughrim).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—Asst. H.S. £200.
Barnsley, Beckett Hospital.—Jun. H.S. £150.
Bath, Royal Mineral Water Hospital.—Res. M.O. £250.
Belgrave Hospital for Children, Clapham-road, S.W.—H.P. and H.S. £100 and £75 respectively.
Birkenhead Borough Hospital.—Sen. and Jun. H.S.'s. £200 and £170 respectively.
Birmingham, City Sanatorium, Yardley-road, Small Heath.—Third Asst. Res. M.O. £350.
Birmingham, Monyhull Colony for Epileptics and Feeble-minded.—Res. M.O. £650.
Blackburn County Borough.—M.O.H. £1000.
Blackburn and East Lancashire Royal Infirmary.—Jun. H.S. £250.
Bolingbroke Hospital, Wandsworth Common, S.W.—P. £50.
Bradford Children's Hospital.—H.S. £180.
Bridgend, Glamorgan County Asylum.—Jun. Asst. M.O. £350.
British Guiana.—Asst. M.O. £400.
Cancer Hospital, Fulham-road, S.W.—Hon. Dent. S. 25 gs. Also Two H.S.'s. £150 each.
Carlisle, Cumberland Infirmary.—Res. M.O. £200.
Central London Ophthalmic Hospital, Gray's Inn-road, W.C.—H.S. £50.
Chelmsford, Administrative County of Essex.—Tuberc. O. £500.
Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.—H.S. £120.
Coventry Education Committee.—Sch. Dent. £400.
Denbigh County.—Sch. Med. Insp. £600
Derby, Derbyshire Royal Infirmary.—H.S. £200.
Dorchester, Dorset County Council Education Committee.—School Dentists. £400.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Cas. O. £120.
Evelina Hospital for Children, Southwark, S.E.—H.S. £160.
Exeter, Royal Devon and Exeter Hospital.—Hon. Surg. Regis. and Surg. Anæsthetists.
Gateshead Dispensary.—Asst. M.O.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P and Asst. H.S. £175 and £150 each.
Great Northern Central Hospital, Holloway, N.—H.P. £150.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—Cas. M.O. £150. Also Hon. Dent. S.
Holborn Union Infirmary, Archway-road, N.—Sec. Asst. M.O. £250.
Hospital for Sick Children, Great Ormond-street, London, W.C.—Director of the Massage and Physical Exercises Department. Also Res. Med. Supt. £200. Also Asst. Cas. M.O., H.P., and H.S. £50 each.
Hospital for Women, Soho-square, W.—Hon. M.O.
Huddersfield Royal Infirmary.—Asst. H.S. £150.
Hull Education Committee.—Sch. Dent. £400.
Kesteven County Council.—Female Asst. Sch. M.O. and M.O.H. £450.
Kingston Infirmary.—Asst. Res. M.O. £300.
King Edward's Memorial Hospital, Ealing.—Res. H.S. £200.
Leeds City Tuberculosis Hospital, Killingbeck.—Med. Supt. £500.
Leeds Public Dispensary.—Res. M.O. £200.
Liverpool, City Infectious Hospitals.—Asst. Res. M.O. £250.
Liverpool Royal Infirmary, Medical School.—H.P.'s and H.S.'s. £60.
Liverpool, Stanley Hospital.—Two H.S.'s. £150.
Liverpool University, Faculty of Medicine.—Lecturer in Histology and Assoc. Prof. in Cytology.
Macclesfield County Asylum.—Asst. M.O. £350.
Maidstone, Kent County Ophthalmic Hospital.—H.S. £250.
Maidstone, Kent Education Committee.—Sch. M. Inspec. £492.
Manchester, County Asylum, Prestwich.—Asst. M.O. £450.
Manchester, Crumpsall Institution and Infirmary, Crescent-road.—Res. Asst. M.O. £300.
Manchester, St. Mary's Hospitals for Women and Children.—H.S. for Whitworth Park Hospital. £100.
Metropolitan Hospital, Kingsland-road, E.—Visiting Anæsth. 25 gs.
Middlesbrough Education Committee.—Asst. Sch. M.O. £450.
Middlesbrough, North Ormesby Hospital.—Asst. H.S. £175.
Miller General Hospital for South-East London, Greenwich, S.E.—M.O. for X ray Dept. H.P. and Registrar. £100. Also Hon. S.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Out-patient M.O. £90.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—H.P. £150.
Newcastle-upon-Tyne Dispensary.—Two Hon. S.'s and One Hon. P.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon Asst. to Ophthal. Dept.
Northampton General Hospital.—H.S. £150.
Norwich, Norfolk and Norwich Hospital.—Cas. O. £200.
Oldham County Borough.—Asst. M.O. £500.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Portpatrick.—M.O. and Public Vaccinator. £80.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Dist. Res. M.O. £80.
Queen Mary's Hospital for East End, Stratford, E.—H.P. Also Anæsth.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two Asst. S.'s Also H.P. £100.
Reading County Borough.—M.O.H. £800.
Reading, Royal Berkshire Hospital.—H.P. and Second H.S. £200 each.
Richmond Royal Hospital, Surrey.—Hon. M.O.
Royal Dental Hospital of London, Leicester-square, W.—Asst. Dent. S.
Royal Free Hospital, Gray's Inn-road, W.C.—Res. Obstet. Asst. and Med. and Gynæc. Registrars and Asst. Curators of Museum. Each £150. Also Clin. Asst. Also Cas. O. £100.
Royal Institute of Public Health, 37, Russell-square, London, W.C.—Sen. Demonstrator of Bacteriology.
Salford Royal Hospital.—Res. S.O. £250. H.S. £150.
Salford Union Infirmary.—Sen. Res. Asst. M.O., Sec. Res. Asst. M.O. £350 and £300.
Scarborough Hospital and Dispensary.—Two H.S.'s £150.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Sheffield Royal Infirmary.—Aural H.S. and Res. M.O. £150 each. Also Hon. Radiologist. £100.
Shrewsbury, Royal Salop Infirmary.—H.S. £250.
Singapore Municipality, Straits Settlement, Infectious Diseases Hospital, &c.—Med. Supt. £900. Asst. Health O. £750.
6th London Field Ambulance, 2nd London Division, Territorial Army.—Officers.
Stamford, Rutland, and General Infirmary, Stamford.—H.S. £200.
Stockport Infirmary.—Jun. Res. M.O. £200.
Stoke-upon-Trent Union.—Res. M.O. £600.
Sunderland County Borough.—Asst. M.O.H. and Maternity and Child Welfare M.O. £600.
Tonga Isles, Western Pacific.—M.O. £500.
Turks and Caicos Islands.—M.O. £400.
University of Birmingham, Public Health Department.—Laboratory Asst.
University of London.—External Examiners.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Non-res. H.S. £100.
Woolwich Tuberculosis Dispensary, Maxey-road, Plumstead, S.E.—Asst. Tuberc. O. £500.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Currie and at Lynton.

Births, Marriages, and Deaths.

BIRTHS.

HOFFMAN.—On Feb. 29th, at Tatsfield Lodge, Tatsfield, the wife of H. Drummond Hoffman, M.B., B.Sc., of a son.

HUGHES.—On March 2nd, at Eastbridge, Croydon, the wife of Morgan Hughes, M.R.C.S., L.D.S. Eng., of a daughter.

SWANN.—On March 1st, at St. Swithin's, Shortlands, Kent, the wife of M. B. R. Swann, M.A., M.R.C.S., of a son.

DEATHS.

ENGLISH.—On the 3rd March, at 33, Gilston-road, S.W., suddenly, of heart failure following bronchitis, Dr. Thomas Johnston English.

HUNT.—On March 3rd, at Darlington-place, Bath, John Percival Hunt, Lieutenant-Colonel, R.A.M.C. (retired), M.D., F.R.C.S.I., Barrister-at-Law, aged 75.

LIESCHING.—On March 4th, at Tiverton, Devon, Charles Edward Liesching, M.R.C.S., L.R.C.P., J.P., aged 57 years.

MILBURN.—On March 3rd, at The Laurels, Kidlington, near Oxford, Frederick Le Févre Milburn, M.R.C.S., L.S.A., aged 77.

MILLARD.—On March 1st, at Cheltenham, William Joseph Kelson Millard, M.D., F.R.C.P.E., M.R.C.S., L.S.A.

SANDERS.—On March 6th, at Willingdon, Horace Sanders, M.R.C.S., L.R.C.P., in his 65th year.

WEST.—On March 2nd, at Wimpole-street, W., Samuel Hatch West, M.D., F.R.C.P., in his 72nd year.

WORKMAN.—On March 8th, at Woodside-terrace, Glasgow, after a short illness, Charles Workman, M.D., aged 67.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, March 18th.—Papers:—Mr. W. B. Brierley: On a Form of Botrytis Cinerea with Colourless Sclerotia (communicated by Dr. E. J. Russell).—Mr. R. R. Gates: A Preliminary Account of the Meiotic Phenomena in the Pollen Mother Cells and Tapetum of Lettuce (Lactuca Sativa) (communicated by Prof. J. B. Farmer).

ROYAL SOCIETY OF MEDICINE 1, Wimpole-street, W.
Monday, March 15th.

OCCASIONAL LECTURE: at 5 P.M.
Dr. John Freeman: Toxic Idiopathies: the Relationship between Hay and other Pollen Fevers, Animal Asthmas, Food Idiosyncrasies, Bronchial and Spasmodic Asthmas, &c.

Tuesday, March 16th.

SPECIAL GENERAL MEETING OF FELLOWS: at 5 P.M.
GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Tuesday, March 16th.

THERAPEUTICS AND PHARMACOLOGY (Hon. Secretaries—Philip Hamill, Douglas Cow): at 4.30 P.M.
Dr. F. Ransom: Action of Strontium on Frog's Heart.
Dr. E. P. Poulton: A Case of Diabetes Insipidus treated with Pituitrin.

PATHOLOGY (Hon. Secretaries—J. A. Murray, Cecil Price-Jones): at 8.30 P.M.
A *Laboratory Meeting* will be held at the Bacteriological Department of the London Hospital, E.

Wednesday, March 17th.

HISTORY OF MEDICINE (Hon. Secretaries—Arnold Chaplin, F. G. Crookshank): at 5 P.M.
Papers:
Dr. E. T. Withington: The Medical Terms in "Liddell and Scott."
Dr. Comrie: "Michael Scot."

Thursday, March 18th.

DERMATOLOGY (Hon. Secretary—Henry MacCormac): at 5 P.M.
Cases (4.30 P.M.) will be shown by—
Dr. Knowsley Sibley: Xanthoma Diabeticorum.
And others.

Friday, March 19th.

OTOLOGY (Hon. Secretaries—H. Buckland Jones, Lionel Colledge): at 5 P.M.
Cases and Specimens (4.45 P.M.) will be shown by—
Mr. Herbert Tilley, Mr. A. H. Cheatle, Mr. J. F. O'Malley, Dr. Dundas Grant, and others.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Walter J. Turrell, Stanley Melville): at 8.30 P.M.
Discussion:
On "Radium-therapy and Radio-therapy of Exophthalmic Goitre," to be opened by the President of the Section, Dr. A. E. Barclay.
Paper:
Dr. Sidney Russ: Vision by Ultra-violet Light.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, at the Royal Army Medical College, Grosvenor-road, S.W.
FRIDAY, March 19th.—8 P.M., Laboratory Meeting. Demonstrations:—Sir Stewart Stockman: Rabies. Prof. C. Dobell: The Amœbæ of Man. Colonel L. Cummins: Pathogenic Fungi. Dr. C. M. Wenyon: Development of Malarial Parasites in Mosquitos. Dr. A. C. Stevenson: Trypanosomes outside Blood-vessels. Surg.-Capt. P. W. Bassett-Smith: Scurvy in Animals. Dr. Garrow: The Agglutinometer.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
TUESDAY, March 16th—5 P.M., Goulstonian Lectures:—Dr. J. L. Birley, C.B.E.: The Principles of Medical Science as Applied to Military Aviation. (Lecture III.)
THURSDAY.—5 P.M., Lumleian Lectures:—Sir J. Rose Bradford, K.C.M.G., C.B.: The Clinical Experiences of a Physician during the Campaign in France and Flanders 1914–1919. (Lecture I.)

UNIVERSITY OF LONDON.
Advanced Lectures in Physiology to Students of the University and others interested in the subject.
A Course of Eight Lectures on Physiologically Balanced Solutions will be given by Dr. W. L. Symes in the Physiological Laboratory of the University, South Kensington, S.W.:—
TUESDAY, March 16th.—5 P.M., Lecture VIII.
A Course of Eight Lectures on the Reaction of the Blood and Acidosis will be given by Dr. J. W. Trevan, at St. Bartholomew's Hospital, West Smithfield, E.C.:—
WEDNESDAY, March 17th.—4.30 P.M., Lecture VIII.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Mile End, E.
A Course of Instruction on the Diseases of Children, open to Post-Graduates and to Students of the Hospital. (The lectures will be illustrated by lantern slides.)
WEDNESDAY, March 17th.—10 A.M., Clinical Demonstration:—Dr. Miller. (At the Children's Out-patient Department.)
SATURDAY.—10.15 A.M., Lecture X., Dr. Hutchison: General Diseases. (At the Anatomical Theatre.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).
A Course of Lectures on Syphilis is being given by various members of the staff of King's College Hospital during the present year.
FRIDAY, March 19th.—9.15 P.M., Mr. L. V. Cargill: Syphilis of the Eye.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, POST-GRADUATE COURSE, Westmoreland-street, W.
MONDAY, March 15th.—11 A.M., Out-patients: Dr. Goodall. 2 P.M. In-patients: Dr. Moon.
TUESDAY.—2 P.M., Out-patients: Dr. R. Wells. 3 P.M., In-patients: Dr. Gibbes.
WEDNESDAY.—2 P.M., Out-patients: Dr. Moon. 5.30 P.M., Lecture:—Dr. R. Wells: Aneurysm.
THURSDAY.—10 A.M., In-patients: Dr. Hamill: 2 P.M., Out-patients: Dr. Price.
FRIDAY.—2 P.M., Out-patients: Dr. Gibbes. 2.30 P.M., In-patients: Dr. Wells.
SATURDAY.—10.30 A.M., In-patients: Dr. Hamill.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Special Course of Lectures and Demonstrations on Tuberculosis for Medical Men and Women qualifying to become Tuberculosis Officers, General Practitioners, and others. Bacteriological Demonstrations will be given in the Laboratories of the Institute, and visits arranged to Sanatoriums, Tuberculosis Dispensaries, &c.
THURSDAY, March 18th.—5 P.M., Lecture X.:—Dr. S. V. Pearson: Suggested Reforms in the Campaign against Tuberculosis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
TUESDAY, March 16th.—2 P.M., Demonstration:—Mr. E. Gillespie: Tuberculous Disease of Bones and Joints. 4.30 P.M., Lecture:—Dr. J. B. Banister: The Routine Examination of Patients before Labour.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
MONDAY, March 15th.—2–3.30 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Ward Cases: Dr. Aldren Turner.
TUESDAY, March 16th.—2–3.30 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Dr. Tooth: Poliomyelitis.
WEDNESDAY, March 17th.—2 P.M., Dr. Yealland. 3.30 P.M., Dr. Collier: Aphasia and Apraxia. (I.)
THURSDAY, March 18th.—2–3.30 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30, P.M., Ward Cases: Dr. S. A. Kinnier Wilson.
FRIDAY, March 19th.—2–3.30 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Gordon Holmes: Cerebellar Disease. Ataxia. (II).
SATURDAY, March 20th.—9 A.M., Surgical Operations.
Fee for Post-Graduate Course £7 7*s.* C. M. HINDS HOWELL, Dean.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
SATURDAY, March 13th.—10 A.M., Dr. A. Saunders: Medical Diseases of Children.
MONDAY, March 15th.—5 P.M., Mr. D. Armour: Cervical Rib.
TUESDAY.—5 P.M., Dr. Pritchard: Some Common Infections.
WEDNESDAY.—5 P.M., Dr. Beddard: Practical Medicine.
THURSDAY.—5 P.M., Mr. Baldwin: Practical Surgery.
FRIDAY.—5 P.M., Special Lecture:—Prof. Sir Clifford Allbutt: Kinds of Pneumonia.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.
WEDNESDAY, March 17th.—4.30 P.M., Dr. C. Wall: Bronchitis and Emphysema.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY, March 16th.—3 P.M., Prof. A. Keith: British Ethnology: The Invaders of England. (Lecture III.)
THURSDAY.—3 P.M., Mr. S. Graham: (I) The Spirit of America After the War.
FRIDAY.—9 P.M., Mr. E. McCurdy: Leonardo da Vinci.
SATURDAY.—3 P.M., Prof. Sir J. J. Thomson, O.M.: Positive Rays. (Lecture V.)

CHADWICK PUBLIC LECTURES, in the Lecture Room, Royal Society of Arts, John-street, Adelphi, W.C.
MONDAY, March 15th.—5.15 P.M., Lecture:—General Sir John Goodwin, K.C.B., C.M.G., D.S.O.: Military Hygiene in Peace and War. II., Army Hygiene during the Recent War (Application of its Principles to Active Service Conditions). (Illustrated by lantern slides.)

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE POST-GRADUATE DEMONSTRATIONS, at the Sheffield Royal Hospital.
MONDAY, March 15th.—3.30 P.M., Dr. Nutt: X Ray Therapeusis.
TUESDAY.—4 P.M., Dr. Hay: Subjective Sight-testing.
WEDNESDAY.—3.30 P.M., Dr. Wilkinson: Mastoid Suppuration.
THURSDAY.—3.30 P.M., Dr. Skinner: New Growths of Skin.
FRIDAY.—4 P.M., Dr. Hay: Injuries of Cornea

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, March 16th.—4.30 P.M., Mr. P. R. Wrigley: Carcinoma of the Breast.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.
THURSDAY, March 18th.—4.30 P.M., Lecture:—Mr. Macalpine: Indications for Prostatectomy. (At the Salford Royal Hospital.)

BRIGHTON DIVISION OF THE BRITISH MEDICAL ASSOCIATION, at the Sussex County Hospital.
THURSDAY, March 18th.—4 P.M., Clinical Demonstration.

Notes, Short Comments, and Answers to Correspondents.

MILITARY HYGIENE IN OLDEN TIME.[1]

BY SIR JOHN GOODWIN,
DIRECTOR-GENERAL, ARMY MEDICAL SERVICE.

HYGIENE is a science with which every army medical officer is intimately concerned, and I propose in my first lecture to endeavour to trace the history of army hygiene, more especially in war, and to show what an immense bearing hygiene has on the success or failure of an army in the field. The commander of a force naturally views with the gravest concern any depletion from sickness of his effective troops. One sick man does not merely imply the loss of one rifle; it entails the diversion of otherwise useful manpower into the services of hospitalisation and transport. Until quite recent years it has never been sufficiently recognised that a very large proportion of army medical effort should be directed towards the prevention of disease. It might be of interest to you if I reviewed briefly

History and Progress of Army and Civil Hygiene.

Some of the earliest sound and concise rulings for sanitation in an army on active service were recorded in Deuteronomy, which was probably written more than 2500 years ago. Moses insisted above all things that the camps must be kept clean. He gives detailed sanitary rules to be observed, especially regarding the disposal of excreta. In Xenophon's analysis, written 379–371 B.C. we read how silver kettles were carried with the army to provide boiled water for drinking purposes. Xenophon also, in describing the retreat of the Greeks, tells us that they were very liable to blindness—doubtless snow blindness—and also describes the mortification of the extremities from snow and cold. Pliny describes the disease which afflicted the Roman army in Germany and—a very interesting point—mentions how the Romans constantly shifted their camps in order to combat the evil; it is also interesting to read that Alexander the Great's main principle in the preservation of the health of his army over 2000 years ago was a very frequent change of encamping ground. As regards actual losses from sickness, Plutarch states that Demetrius in his last expedition lost over 8000 men from sickness, while at the siege of Syracuse the Carthaginians were almost destroyed by a pestilence attended with a flux of blood.

In the fourteenth century the "Black Death" was terribly fatal in its effects. Europe is supposed to have suffered losses to the extent of 40 millions and China 13 millions from this disease. 150 years later the "sweating sickness" was carried by Henry VII.'s army throughout this country, and was the cause of an extremely heavy mortality. In the sixteenth and seventeenth centuries several epidemics of plague occurred in England, and this disease is supposed to have been eradicated from London by the great fire in 1666.

Prevention of Disease.

Very little was, however, written as to the prevention of disease, and Sir John Pringle, in 1768, stated that when he joined the army there was little, if any, literature on the subject. The same writer, in describing the terrible outbreaks of dysentery in our army in Flanders in the years 1742–1745, stated that the disease usually supervened in the autumn, and was due, in his opinion, to the advent of the colder weather at night. He remarks the fact, as if it were a curious coincidence, that the health of the troops appeared immediately to improve when they were removed to a fresh area, and he hazards the opinion that possibly the foul straw and the privies may have been contributory causes. The chief remedies, he states, were the lancet and blisters.

Amongst all this chaff, this groping in the dark, we come across gleams of light, occasional grains of sound advice. The following sentence, written of the army more than 150 years ago, holds equally good to-day. "The preservatives from diseases are not to depend on medicines, but upon such orders as, at the same time that they do not appear unreasonable to him, the soldier shall be obliged to obey." Towards the close of the eighteenth century we begin to obtain something in the nature of figures regarding sickness of armies in the field. In 1792 the allied Austrian and Russian armies during one month, without any considerable fighting, lost 25,000 men, or more than one-fourth of their number, every village being filled with dead and dying. Sir John Pringle mentions, apparently as one of the advantages of a military life in the early part of last century, that "the soldier, in time of war, by the smallness of his pay, is secured against excess in eating, the most common error in diet."

Many army reforms were brought about by Sir James McGrigor, who became Director-General of the army in 1814. It was due to him that each soldier in barracks was provided with a separate bed; indeed, it was only a very short time before that an army medical officer, Dr. Robert Jackson, who must evidently have been a most troublesome fellow, introduced a system of dieting the sick while in hospital, and also insisted that sick soldiers should have separate beds instead of having to lie two or three together, as had formerly been the custom.

Mortality from Sickness in Various Campaigns.

Probably one of our most disastrous campaigns, from a hygienic point of view, was the Walcheren Expedition of 1809, where our mortality from disease amounted to 346·9 per 1000 of strength of troops. We have all read of the trials and hardships of the troops in the Crimean War in 1854 in which the mortality from disease amounted to 230 per 1000 of the strength. In the Afghanistan War of 1878–1880 the mortality was 93·7 per 1000, showing some improvement. Bad as these figures are, those of other nations are even more unfavourable; for example, in the French Soudanese Campaign of 1888–1889 the mortality from disease amounted to 280 per 1000, worse figures than those of our own army in the Crimean Campaign 35 years previously.

I think that perhaps the most striking example of the havoc which may be wrought by disease in an army in the field is that furnished by the French army in Madagascar in 1895, where the mortality from disease amounted to 300 per 1000 of strength. In this campaign there were killed by the enemy 7 and wounded 94, while the deaths from disease numbered 5600. The evils in the past were mainly due to lack of coördination and of real knowledge on which concerted action could be based. Nevertheless, advances were made, and as an example of the steady progressive improvement in the health conditions of the soldier, and the increased success in disease prevention, it is interesting to note that in India during the five years 1878–1882 the following were our sickness and mortality rates per 1000 of men serving among European troops. These figures may be compared with those for 1912:—

	1878–1882.	*1912.*
Constantly sick	68·1	28·8
Deaths	20·5	4·6
Malaria	559	82
Dysentery	42·8	5·2
Cholera	5·7	0·3
	(4·2 deaths)	(0·2 deaths)

Certain excellent decisions which bore good results had been arrived at more or less empirically—for example, the spacing out of men in barracks recommended by the Herbert Commission of 1858, which in itself did so much to lower the incidence of tuberculosis and other diseases in the army.

Up to and including the Crimean War the medical service of the army had no fixed establishment of personnel. Indeed, during that war some 240 enlisted men represented the total medical department in the field exclusive of medical officers. So impressed with the evils of this system were the committee who furnished the medical report of the Crimean War that they found it necessary to comment as follows:—

"Without a trained hospital corps under the orders of the (medical) department superintending medical officers must be inoperative for all good; for without this aid they must see their best efforts lamentably fail to secure to the soldier all that is requisite to promote his comfort and bring about his recovery."

In addition, however, to the lack of personnel, conditions in the Crimea were largely due to lack of precise knowledge of the ætiology of the diseases which ravaged the troops. Two requirements were therefore necessary for the good of the army—namely, an organised personnel and increased knowledge. Up till the end of the century efforts were made to provide both with very fair success, so that at the time of the South African War the army was provided with an organised medical service having its own personnel, trained for its proper purposes and staffed by officers equipped with recent medical knowledge. The recommendations of the Herbert Report after the Crimea, indeed, went very much further, and the suggestions of that one illuminating document embraced all those improvements which were not fully provided until the lapse of over half a century. That report is noteworthy as suggesting an advisory board on hygiene as well as the early Army Medical School at Netley, and stands to-day as a lasting tribute to the foresight of its authors.

[1] Being an abstract of the first of three Chadwick lectures on Military Hygiene in Peace and War, delivered on March 8th, 1920.

CIRCULARS TO DOCTORS.

WE gather from the catalogue of the Agence de Publicité Denis Bodden in Brussels (82, Bd. Maurice Lemonnier) that there are 4045 doctors in Belgium, 2160 in Holland, 90 in Luxembourg, and 2334 in Switzerland. At all events, this firm is prepared to supply gummed addresses to these numbers for circulars, catalogues, and the like, at a cost of fr. 24, 15, 1 and 15 respectively.

DIPHTHERIA ANTITOXIN IN INFLUENZA.

WE have received from Dr. Robert Nairn, of Hastings, N.Z., a table of 41 cases (34 recoveries) of influenza treated with diphtheria antitoxin (4000 units). Temperature charts of many of the cases, of which 20 were complicated by pneumonia, show that a definite reaction, with rise of temperature, accompanied the antitoxin, followed by a fall about 48 hours after the injection. Dr. Nairn says that the subjective improvement was as marked as in cases of diphtheria. In a previous letter (THE LANCET, 1919, i., 635) Dr. Nairn suggested an ætiological resemblance between diphtheria and influenza. The beneficial effects of diphtheria antitoxin do not necessarily confirm this supposition, since normal horse serum has been found to possess markedly immunising properties.

CAUSES OF DEATH IN WEST AFRICA.

AMONG the vital statistics issued by the Colonial Office is an interesting record of the causes of death from disease among non-native officials in the group of West African colonies which includes Gambia, Sierra Leone, Gold Coast, and Nigeria. The causes of death during the year 1918 were: Blackwater fever, 6; heart disease, 2; dysentery, 1; carcinoma of stomach and liver, 1; gastric hæmorrhage and subphrenic abscess, 1; alcoholism, 1; influenza epidemic, 27—i.e., influenza, 13; influenza and pneumonia, 8; influenza and congestion of the lungs, 1; influenza and malaria, 1; pneumonia, 3; pneumonia and malaria, 1. The absence of deaths from malaria, except in conjunction with influenza, and from yellow fever, is an encouraging feature, and had it not been for the influenza epidemic the death-rate in 1918 would have been the lowest on record.

THE EFFECT OF AMERICAN RELIEF ON THE MORTALITY-CURVE OF CHILDREN IN VIENNA.

WE have received from Mr. Walter Lyman Brown, Director for Europe of the American Relief Administration, European Children's Fund, a chart showing the comparative mortality of children in Vienna, between the ages of 6 and 15, for the years 1917, 1918, and 1919. The chart, which does not readily lend itself to reproduction, has been studied by Professor von Pirquet, general Austrian commissioner of the Amerikanische Kinder-Hilfs-Aktion, and Dr. Mayerhofer, his chief assistant, who have made the following statement:—

"So far as it is permissible to draw conclusions from statistical figures and the curves derived therefrom, we are justified in deducing from the material before us that the American feeding work has considerably influenced the death-rate of children. We see a drop of the death-rate from 158 in June, 1919, to 73 in November, a drop which is not evident to such an extent during the years of 1917 and 1918.

The course of the curve showing the mortality which could have been expected without the feeding work is indicated by the blue line. We must emphasise in justice to the feeding work that at the end of 1919 the death-rate of the children between the ages of 6 and 15 years has been continuously the lowest since 1917. This is so much the more remarkable, as in the autumn and winter of 1919 a heavy epidemic of measles and a beginning influenza epidemic appeared."

We agree that a study of the chart bears out this deduction, which will be an encouragement to those who are engaged in this labour of love to redouble their efforts.

POLICE-AIDED SCHEME FOR CLOTHING DESTITUTE CHILDREN.

Sir William Gentle, who has just resigned the office of Chief Constable of Brighton, will be remembered as the originator, in February, 1904, of the Police-aided Scheme for Clothing Destitute Children. King Edward VII. once visited the police station at Brighton and saw the scheme in actual working. Little was done during the war period, but it may be hoped that Sir William Gentle, before finally relinquishing his office, will revive the work. During the winter months the police frequently observe children in the streets insufficiently clothed and consequently exposed to danger and suffering. The constable reports names and addresses to the superintendent of his division, who directs inquiries to be made. The homes of the children are then visited by the police, and if the fathers are found to be earning sufficient they have to provide adequate clothing for their children or are prosecuted under the Prevention of Cruelty to Children Act. If it be found that the parents are out of employment, and consequently unable to provide suitable clothing, garments are provided. There is no fear of the garments finding their way to the pawnshops, as each article bears a particular mark, and that mark is placed in the possession of the pawnbroker. Girls are also assisted so as to be able to enter domestic service. The war has changed the conditions in many ways, but there is no doubt that in Brighton, and in the other towns which copied the example, there is still scope for a continuance of this humanitarian work which changed the common conception of the policeman so that he came to be looked upon as a friend rather than as an enemy.

THE REDUCTION OF THE BREAD SUBSIDY.

WE live in an age of big figures, and the announcement of the Government of their intention to reduce the bread subsidy in the coming financial year by 45 millions gives some idea how the nation was helped to get its bread at relatively modest prices through the war. It is stated, in fact, that if no change were made the cost to the Exchequer on present estimates would be approximately 90 millions. The price of the loaf after April 12th will be in the neighbourhood of 1s. as against 9½d. at the present time. The average rate of extraction of flour required to be obtained from the ground wheat is also to be raised from 77 to 80 per cent. Experience has shown that the increased extraction of flour in the past did not lead to disturbance of health, and there is no suggestion to make a loaf of anything but wheat. At certain times through the war the extraction exceeded 90 per cent., and the admixture with other cereals and flour was authorised. Our bread is to remain a pure wheat product.

MINISTRY OF PENSIONS: REGIONAL COMMISSIONERS.

WE have published from time to time (THE LANCET, 1919, ii., 119 and 813) the names of the regional commissioners of the Ministry of Pensions and the boundaries of the areas over which they hold jurisdiction. To these commissioners has now been entrusted the responsibility of obtaining for disabled officers and nurses the medical or surgical treatment to which they are entitled. A discharged officer or nurse who is claiming retired pay or pension on the ground of disability attributable to or aggravated by service and who is in need of treatment should apply to the commissioner of medical services at the regional office. The revised list of the regions, with their respective commissioners and county boundaries (C.B.) is as follows:—

1. Scotland: Dr. G. H. R. Gibson, D.S.O., Adelphi Hotel, Cockburn-street, Edinburgh. C.B., all Scotland.
2. Northern: Dr. Hugh Richardson, D.S.O., 14, Clayton-street West, Newcastle-on-Tyne. C.B., Northumberland, Durham, Cumberland.
3. North-Western: Dr. A. H. Williams, 13, Piccadilly, Manchester. C.B., Lancashire, Cheshire, Westmorland, Isle of Man.
4. Yorkshire: Dr. C. H. Milburn, O.B.E., 7, Boar-lane, Leeds. C.B., Yorkshire.
5. Wales: Dr. Bickerton Edwards, O.B.E., Angel Building, Cardiff. C.B., All Wales and Monmouthshire.
6. West Midlands: Bethany Buildings, Loveday-street, Birmingham. C.B., Staffordshire, Shropshire, Warwickshire, Worcestershire, Herefordshire.
7. East Midlands: Colonel A. B. Ward, D.S.O., Black's Building, Stoney-street, Nottingham. C.B., Leicestershire, Lincolnshire, Nottinghamshire, Derbyshire, Northamptonshire, Rutlandshire.
8. South-Western: Dr. James Young, Clifton Down Buildings, Bristol. C.B., Gloucestershire, Wiltshire, Dorsetshire, Somersetshire, Devonshire, Cornwall.
9. Eastern: Dr. T. Basil Rhodes, 80, Westbourne-terrace, W.2. C.B., Norfolk, Suffolk, Cambridgeshire, Huntingdonshire, Essex, Bedfordshire, Hertfordshire, Buckinghamshire, Oxfordshire, Berkshire.
10. London: Dr. H. J. Neilson, C.B.E., Crown Agents' Annexe, Westminster House, Millbank, S.W.1. C.B., Metropolitan area.
11. South-Eastern: Dr. R. McLeod Veitch, 48, Grosvenor-gardens, S.W.1. C.B., Kent, Surrey, Sussex, Hampshire, Isle of Wight, Channel Islands.
12. Ulster: Dr. A. E. Knight, D.S.O., M.C., Grand Central Hotel, Belfast. C.B., Ulster.
13. Ireland, South: Dr. D. A. Carruthers, Dunlop House, Abbey-street, Dublin. C.B., Munster, Leinster, Connaught.

Communications with regard to retired pay or pension should be addressed to the Officers' Awards Branch, Cromwell House Annexe, Millbank, London, S.W.1.

THE MAGNET AUTO-STERILISER.

THE General Electric Co., Ltd., of 67, Queen Victoria-street, London, E.C., have recently introduced a steriliser for surgical instruments which should prove convenient in practice. It is described as being made on the "magnet" principle—i.e., with easily replaceable heating element (immersion type)—the apparatus including a heat-insulated handle for raising the lid besides a perforated self-draining tray, which is automatically lifted out of the liquid by lever hinges when the lid is raised. The liquid is rapidly brought to the boiling point and the heating elements can be supplied adjusted to varying voltage main supplies. The modus operandi is to fill the containing vessel with water, so that the immersion heater is well covered and the instrument tray properly immersed. The current is then switched on, and as soon as sterilisation is assured the lid is raised by means of the heat-insulated handle. The instrument tray is thus lifted out of the water, and the instruments dry rapidly by residual heat. Condensed water formed on the lid is caught in a trough receptacle and returned to the water-container when putting back the lid to its position. It seems to us that it would be an advantage to use distilled water in the steriliser, as then no film of mineral salts would be left on the instruments when automatically drying.

MEDICAL AFFAIRS IN BIHAR AND ORISSA, 1918.

THE population of Bihar and Orissa, including Chota Nagpur, at the census of 1911, was 34,489,846, and on this basis the ratios for births, deaths, &c., have been calculated. The birth-rate was 37·5 and the death-rate 56·7 per 1000, as compared with 40·4 and 31·5, the corresponding ratios for the preceding quinquennium; the decrease in the birth-rate was general in both urban and rural districts, only 4 of which out of the total 21 recorded a higher ratio than in the quinquennium.

This decrease is considered by Dr. S. N. Tiwari, the officiating Sanitary Commissioner, to have been due chiefly to the extensive and virulent epidemic of influenza, and partly also to defective registration and a general low vitality of the population from prevalence of fever and dearness of food during the previous two years. All the other provinces of India showed a similar reduction except Assam. The enormous increase in the death-rate from 35·2 to 56·7—that is, a total of 741,632 more deaths than in the previous year—was due chiefly to influenza; every province in India showed an increase from this cause, and many in a much greater degree.

In Bihar the two divisions of Patna and Chota Nagpur had fever death-rates of 50·3 and 48·7 per 1000, which were respectively 30·7 and 29·2 per 1000 in excess of the quinquennial average, this increase being due to influenza. In the district of Palamau (Chota Nagpur) the fever death-rate was 59·2; the highest fever death-rate for a town was 61·1 per 1000 at Balasore, of which 40·4 per 1000 was due to influenza. Remedial measures in all districts were undertaken by local bodies helped by the Government, but on account of the very rapid spread of the epidemic throughout the province no pathological investigations or preventive measures could be carried out beyond circulating leaflets giving general information about the disease and care of the patient.

In a concluding paragraph of his report Dr. Tiwari admits that "the existing sanitary organisation in the province failed to make any impression in preventing or combating the several epidemics which prevailed during the year," and points out that the responsibility of providing for and looking after sanitation rests with the local bodies who administer the law. The sanitary department, as at present constituted, is mainly an advisory body, and has no powers or funds at its disposal even to disinfect a well. Considerable progress, however, was made during the year 1919 in waterworks, sewerage, and general sanitary improvements, as detailed in the report by Mr. F. C. Temple, C.E., the sanitary engineer to Government.

Hospitals and Dispensaries.

From the report on hospitals and dispensaries in these provinces it appears that a total of 2,894,567 patients were treated in 1918, of whom 39,523 were in-patients. 60·92 per cent. of these latter were cured, 14·93 per cent. were relieved, 13·22 per cent. "discharged otherwise," 7·20 per cent. died, and 3·73 per cent. remained under treatment at the end of the year. The daily average number of in-patients was 1646·9.

It is stated that "cholera gave 22,731 admissions with 315 deaths, against 12,825 and 316 respectively in 1917." These figures give case-mortality ratios of 1·38 and 2·46 per cent. respectively. There must be some error here, as such low ratios seem to be incredible. In cholera epidemics the case-mortality varies considerably, from 30 to 50 per cent., but is never so low as here stated.

Note.—The details for 1918 are given in the tables accompanying the report. 699 cases were treated as in-patients (with 273 deaths) and 15,803 (deaths not stated) as out-patients at the State public, local fund, and private-aided dispensaries; 68 and 457 cases were similarly treated in the State special and railway dispensaries (with 30 deaths among in-patients); 5704 cases were treated (in- and out-patients) at private non-aided dispensaries. Of these 5704 cases 12 only are stated to have died. The returns are obviously incomplete.

Surgical operations.—**The record of surgical operations is very satisfactory. The total number of all kinds performed in the State public, local fund, and private-aided dispensaries was 124,889, in 119,413 of which a cure was effected. Colonel G. J. H. Bell, C.I.E., I.M.S., Inspector-General of Hospitals and Dispensaries for the province, alluding to the "provincialisation" of the Patna General Hospital in April, 1918, states that he is in favour of this step being taken for the "sadr" (that is, principal) hospitals at all headquarters of districts on a similar basis to what is being done in the Madras Presidency. The expansion of these hospitals appears to involve more expense than can, in many instances, be met by municipal bodies.**

Vaccination.—**As regards vaccination in these provinces the total number of operations performed was 972,423, being a decrease of 125,253 compared with the previous year. This is ascribed to the prevalence of influenza, and was general throughout the whole region. 97·52 per cent. of the vaccinations were successful.**

The mortality ratios for small-pox during the last five years have been 0·22, 0·42, 0·28, 0·19, and 0·17 per 1000 respectively. Dr. Tiwari considers that the decline in the death-rate is not likely to continue "except in the areas where the Vaccination Act has been made compulsory." This is now the case in all municipal towns; opposition has diminished, and is now shown not so much to vaccination itself as to vaccination of an infant under a year old. He recommends that vaccination be made compulsory throughout the province. With regard to inspection of results there appears to have been some difficulty; "villagers generally resent bringing their children for inspection; the system of thorough inspection of the work done in rural areas has suffered by the spirit of independence pervading villagers, resulting in numbers of children not being produced, even for short distances, for the civil surgeon's personal inspection."

Jail Population.

The year 1918 was remarkable for a very large increase in the jail population of these provinces. In 1917 there had been a daily average of 7182 prisoners, while in 1918 the average was 9199.

There was a great increase in sickness and mortality, much larger than would be warranted by the mere increase in numbers: the admissions to hospital were 13,777, compared with 6679; the average daily number sick was 662·3, compared with 310·1; and the deaths 584, compared with 237 in the previous year. In ratios per 1000 the hospital admissions were 1497, compared with 930; the daily average number sick 71·9, compared with 43·1; and the deaths 63·4, compared with 32·9. In the case of several jails the mortality ratios were excessively high—e.g., Daltonganj (226·2 per 1000), Purulia (199·6), Sambalpur (157·3). It is stated that several jails, especially Purulia, Arrah, Bhagalpur, Puri, and Chapra were badly overcrowded on account of rioting at Arrah at the festival of Bakr-id; also that a large number of prisoners on admission to jail were in a very bad state of health from epidemic influenza and its effects or tuberculosis. Taking the jails as a whole, of the 15,811 convicts discharged during the year from central and district jails, 54·67 per cent. had gained weight and only 19·72 per cent. had lost weight.

Lieutenant-Colonel B. J. Singh, C.I.E., I.M.S., Inspector-General of Prisons, who presents this report, considers it essential that a Juvenile Offenders Act should be passed (as in England), empowering magistrates to give two years' detention in a juvenile jail in lieu of a short term in a criminal jail. This would appear to be a sound recommendation. It is good to learn that the boys now play football.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. H. H. Armstrong, Olney; Prof. J. G. Adami, Liverpool.
B.—Bodleian Library, Oxford, Librarian of; Dr. E. C. Bevers, Oxford; Sir J. Barr, Liverpool; Dr. J. L. Brownlie, Glasgow; Mr. F. W. Brunker, Edinburgh; Mr. R. L. Bland, Lond.; Major S. T. Beggs; Mrs. C. Brereton, Lond.
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